

THE IRON AGE

THURSDAY, DECEMBER 1, 1892.

Steam Drop Press.

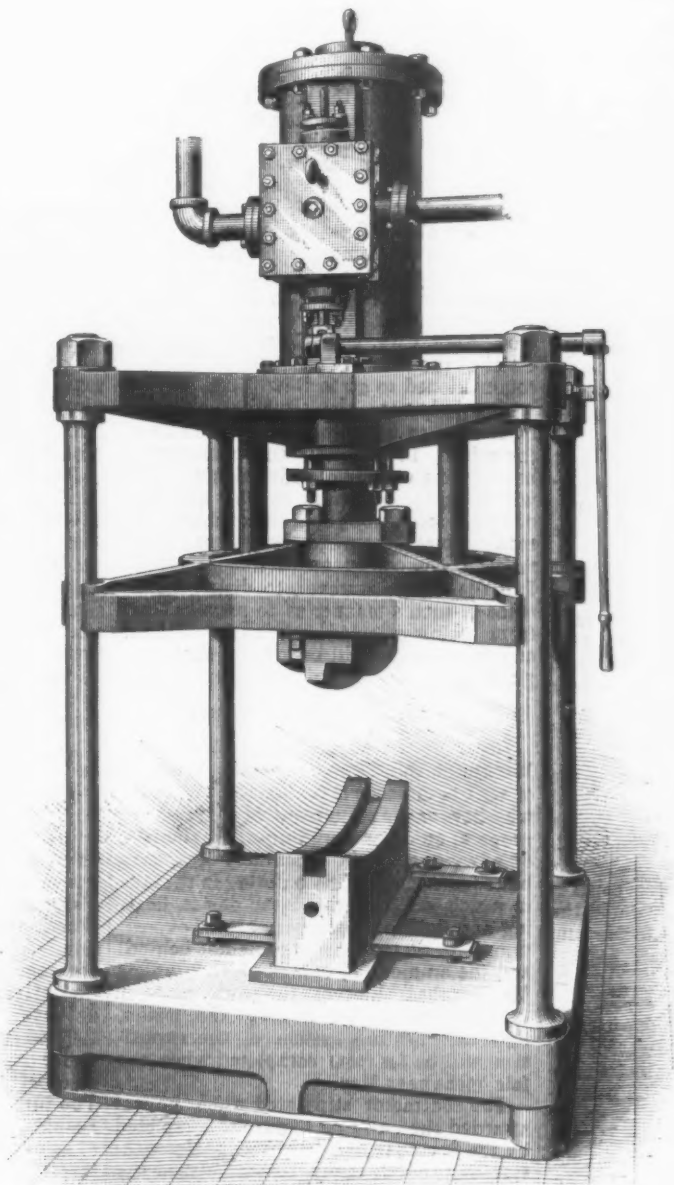
The Cockburn Barrow & Machine Company of 234 Eleventh street, Jersey City, N. J., recently built for their own use a steam drop press which has proved to be a most efficient machine, and to have a wide range of applications. By reference to the engraving, the press will be seen to consist of a cast-iron bed plate, from the four corners of which extend steel guide rods $3\frac{1}{4}$ inches in diameter. At their upper ends these rods support a ribbed cast-iron plate carrying at its center the steam cylinder which is 14 inches in diameter. The piston rod is 5 inches in diameter, the stroke of the piston being 24 inches. The lower end of the piston carries a sliding platen, which is guided by the four vertical rods. Steam is controlled by an ordinary slide valve operated by the hand lever shown at the right. This form of valve, rather than one more easily moved, was adopted, since it is desirable, in this type of machine, to make necessary the application of some power in order to bring the hammer into action. A valve that would respond to a touch must cause an accident and injury by bringing the hammer into play unexpectedly. As will be seen, the base carries one part of the die, the piston rod carrying the fitting part. It is evident that these dies may be of any desired shape according to the work to be performed. The clear die space is about 4 feet square, making it possible to use very large dies. The blow of the hammer can be regulated as required, or the steam may be admitted so slowly that the hammer will act as a press.

As a result of valuable experiments made by the Bethlehem Iron Company of Pennsylvania, Commodore Melville, Chief Engineer of the Navy, has decided to test the value of nickel steel in connection with machinery. Accordingly, a section of the propeller shafting of the "Brooklyn" will be made of the metal, and the sea-going battle ship No. 1 will be similarly provided as to her propeller shafting, so that the test will be made on a practical working scale.

Thorp, Collins & Co., builders of structural iron work, have been awarded the contract for the new filter house, char house and pan house to be erected at Yonkers, N. Y., by the National Sugar Refining Company. The filter house will

be ten stories high and constructed on the iron skeleton frame-work plan with brick walls; size, 75 x 150 feet.

The practicability of adopting oil fuel on some of the smaller vessels of the United States Navy is said to be under consideration at Washington. The improved tanks devised for commercial purposes, the joints and other appliances connected with them, and the devices for



STEAM DROP PRESS.

carrying off the gases which arise from an increase of temperature, and even from agitation, have made it a less dangerous cargo than formerly, removing much of the objection formerly urged.

General Dumont, Supervising Inspector-General of the steamboat service, in his annual report to the Secretary of the Treasury, shows that 650,000,000 passengers were carried during the year by the vessels under his jurisdiction. The number of lives lost was 200, a decrease of 138 compared with the previous year.

The Brooks Technical School.

The Technical School connected with the Brooks Locomotive Works at Dunkirk, N. Y., which reopened for the season on Monday evening, November 14, deserves special notice as being the only school of the kind attached to any locomotive works in the country. There were in attendance at the opening session 79 pupils and application for admission had been made by several more. They had come from every department of the great works, many of them having labored all day. M. L. Hinman, president of the works, in a brief address explained the object in the mind of the late H. G. Brooks when in January, 1883, he founded the school, and said that his successors were to carry it on because of the belief that with the improvement of mind brought about by the educational opportunities here provided there will be produced a class of workmen both better mechanics and better citizens. The school will be under the supervision of Alfred Solano, who is a practical civil engineer and a son-in-law of H. G. Brooks. The main school room is a large and handsome apartment heated by steam and lighted by broad windows. In the evening it is illuminated by incandescent electric lights. Each desk is furnished with text books and a complete set of instruments for mechanical drawing. On the walls are blackboards upon which is given practical instruction in mechanical work, supplemented by models, showing the separate construction of all parts of an engine and their relation to each other. Adjoining the school-room are a convenient cloak room, a lavatory, a reading room, and a library containing standard works and periodicals upon mechanical subjects, besides a cabinet in which each pupil is provided with a shelf

for the preservation of his drawings. The instruction is free, as is also the use of books and the supply of drawing material and instruments and all other apparatus. The attendance is not compulsory, but it is understood when apprentices enter the works that they will attend the school.

At Windsor, Ontario, a bed of solid salt 40 feet thick has been discovered, but it is 1200 feet below the surface. The Canadian Pacific Railway officials say they will erect there one of the largest salt plants in the world.

WORLD'S FAIR NOTES.

Efforts to Repeal the Sunday Closing Act.

The World's Fair Sunday Opening Association of Chicago is actively engaged in securing the expression of the will of the people on the question of repealing the act of Congress closing the Exposition Sunday. Mr. Thompson, secretary of the organization, says that the sentiment of the people of the East on the question of repealing the act is quite as strong as it is in Chicago. This is true of Boston, New York, Washington and Philadelphia.

Petitions for an open fair Sunday will be showered upon Congress to a greater extent than that body has ever before known. These petitions will come from every State and city in the Union. They will come from ministers, bankers, clubs, hotel keepers and labor organizations. One unique feature of the work being done by the association is an effort to gauge public sentiment on the question. Postal cards have been sent to a certain number of men from Dun's Reference Book without discrimination or selection—so many to every city of the United States of the population of not less than 4000 or more than 10,000 inhabitants. These cards were mailed with a circular asking for immediate response. Nothing whatever was given to prejudice the vote. The result was encouraging. From the first 1000 sent out the answers indicate that four out of every five persons in the United States desire a repeal of the Sunday Closing act. The special committee under whose auspices these cards were sent out—composed of James A. Sexton, Mayor Washburne, the Rev. Dr. Thomas and James W. Scott—will certify as to the returns.

The labor organizations of the city will supplement the work by complete and effective work. Mr. Morgan of the Trade and Labor Assembly, in connection with a number of other labor leaders, will spare no means to secure petitions from every organization in the country. In addition to these, resolutions will be passed and sent to the Congressmen and Senators.

No active campaign will be made by the exposition to induce Congress to repeal the act, although it is well known that a bill for that purpose will be introduced. They will give their moral support to the association and aid it in any way consistent with their position in having accepted the appropriation with the condition of Sunday closing.

To Get the Souvenir Coins.

Members of the Finance Committee of the World's Fair Directory took steps last week looking toward securing the souvenir coins now being minted at Philadelphia, the work there having begun on the 19th ult. The directors want the money, but before they can get it they must comply with several clauses in the Congressional Appropriation bill, and one or two of these are important. The first conditions precedent to the delivery of the coin are set forth in the act as follows:

Provided, however, that before the Secretary of the Treasury shall pay to the World's Columbian Exposition any part of said 5,000,000 silver coins satisfactory evidence shall be furnished him showing that the sum of at least \$10,000,000 has been collected and disbursed as required by said act.

And, provided, that the said World's Columbian Exposition shall furnish a satisfactory guarantee to the Secretary of the Treasury that any further sum actually necessary to complete the work of said exposition to the opening thereof has been or will be provided by said World's Columbian Exposition; but nothing herein shall be construed as to delay or postpone the preparation of the souvenir coins hereinbefore provided for.

Before the gates can be opened next May it is estimated that an expenditure of

approximately \$18,200,000 must be made. The first condition in the appropriation act has been more than complied with, since an excess of \$10,000,000 has been expended. To meet the second condition will require an extra effort on the part of the Board of Directors.

In round numbers, the subscriptions by the city of Chicago and stockholders amount to \$10,600,000. Added to this is the sale of the \$4,000,000 of bonds, with the privilege of selling \$1,000,000 more. Then, in making up their \$18,000,000 estimate of assets, the directors are privileged to include the prospective \$2,500,000 of souvenir coins. This would bring the total assets to \$18,100,000. Inasmuch as subscriptions are continually coming in, and the additional fact that more than \$150,000 has already been realized from orders for the coins over and above their face value, it seems that the directory will be able to get the souvenirs as soon as they are minted. It is with this purpose that transcripts of the records authorizing the issue of bonds, statements from the treasurer and auditor showing the receipts and disbursements, as well as vouchers for expenditures over and above the \$10,000,000 mark, will be sent to the Secretary of the Treasury this week.

The Finance Committee decided at its meeting to push the sale of the souvenirs by establishing agencies in different parts of the country. The first one will be in New York City, and Harman Spruance, Chief of the Bureau of Subscriptions, was commissioned to go to New York, and, if in his judgment the situation warrants it, to open an office to promote the sale of the coins. In addition the management has begun a scheme of advertising which will bring the souvenirs to the attention of the people throughout the country. Already several thousand banks and many railroad companies are acting as agents. It is the desire, however, to distribute the coins in such a manner as to prevent them from being gobbled up by syndicates, and therefore all will be given a chance to purchase one at the uniform price of \$1.

Taking Too Much Time.

Delay in the work of completing the Machinery Building is becoming a matter of serious moment if the opinions of those who have made a comparative study of the progress on other buildings and the lack of advancement on Machinery Hall may be relied upon. This building is the one in which will be located the power, heating and lighting machinery of the exposition. At present it is the furthest behind, and the opinion is expressed that unless Mr. Burnham hastens the work more in future than he has hitherto the power, light and heating system of the exposition will be far from completed when the fair opens next May.

The contractor stipulated when he was awarded the building to have it completed by the first day of last June. Notwithstanding this he has not even finished the roof on the structure. Engines and boilers are running in the rain, and a force of men is necessary to keep the still machinery from rusting. Every shower that comes along floods the power plant, and great expense is contracted in keeping machinery in order.

As an instance of the extra cost entailed through failure to hold the contractor to his agreement, it was observed last week that steam coils had to be laid in order to keep warm the broken stone which forms a part of the concrete foundations. In these foundations for the heavy machinery there will be train loads of this stone, and the expense of artificially warming it will be considerable. It has to be borne, however, to prevent the concrete mixture freezing before it can be placed. Then another danger arises. It is said that if the place where this important work is

going on is not shortly roofed over the ground under the foundations will freeze and so injure them as to render it necessary to build new ones. Meanwhile massive engines are being installed on these same foundations.

Spain to Spend \$175,000.

The Spanish Minister at Washington, E. Dupuy de Lome, writes Chief Fearn of the Foreign Affairs Department of the increasing interest throughout Spain in all matters pertaining to the exposition. The enthusiasm upon the subject is most surprising in view of the fact that but few months have elapsed since a significant agitation in Spain about the World's Fair in Chicago had a really popular place. The Madrid Exposition and the official courtesies extended by the United States Government and the exposition authorities generally to the Government of Spain have resulted in an enthusiastic and universal desire upon the part of the people of that country to be adequately represented at Chicago. Minister Lome, in the course of his letter to Chief Walker Fearn, says:

"It has been decided to ask an appropriation of 750,000 pesetas for the exposition. Will send soon plans for pavilion. There is much enthusiasm."

The Cortes will convene in Madrid December 5, and at the beginning the appropriation of \$150,000 will be asked for and granted, which, together with the \$25,000 which was appropriated for the preliminary expenses, will make for Spain the sum of \$175,000, without counting Cuba, Puerto Rico and the Philippines, who will contribute liberally on their own account.

Reports have been circulated in all directions that Spain was going to expend \$14,000 for the exposition because this sum was appropriated from the general funds for offices, correspondence and advertisements, Congress not being in session. To-day it will be right to say that, after Germany, France and Great Britain, Spain is preparing to spend the most of all the other European nations at Chicago in acknowledgment and in return for the honor shown her at the festivities.

Pleased England's Commissioner.

The Hon. Alfred Carpmal, the Special Royal Commissioner who represented the British Royal Commission at the dedicatory ceremonies of the World's Fair buildings, has made an interesting report upon the ceremonies of this occasion to Sir Henry Wood, Secretary of the British Commission. After describing and eulogizing the preliminary ceremonies, in speaking of the exercises in the Manufactures Building, he says: "Such a sight as upward of 100,000 people assembled on one floor, under one roof, had, I suppose, never been seen before. It quite defies description. The turning over of the buildings to the people in presence and with the applause of such a vast multitude had a grand and inspiring effect."

The commissioner has words of eulogy for Chicago, for its business buildings, its streets, residences and hotels. Then he says:

"I am certain that it is the intention of the Chicagoans to make their World's Fair one that shall compare favorably with everything of the kind that has gone before or that may come after. No trouble, no time and no expense will be spared, and no obstacles that can be removed by human energy will be allowed in any way to interfere with the object they have in view. I know that my hosts would have liked to have seen Great Britain represented by a commissioner or commissioners of rank, but all that was expressed was regret that more in number of commissioners were not able to be present, and a hope all would attend during the coming year—an invitation which is not mere

words, but is intended to be taken literally."

Reduced Rates for Steam Power.

The Council of Administration last week modified the rules pertaining to charges for horse power in connection with the running of machinery. As the rules previously stood exhibitors would be obliged to pay \$40 a day for horse power for running "loaded" machinery. Director-General Davis did not think it fair to charge an exhibitor for an all day service when his plant was in operation for but a few hours. The council agreed with him and an order was issued instructing the chiefs of departments to make pro rata charge for extra horse power. If an exhibitor runs his machinery but one, two, or three

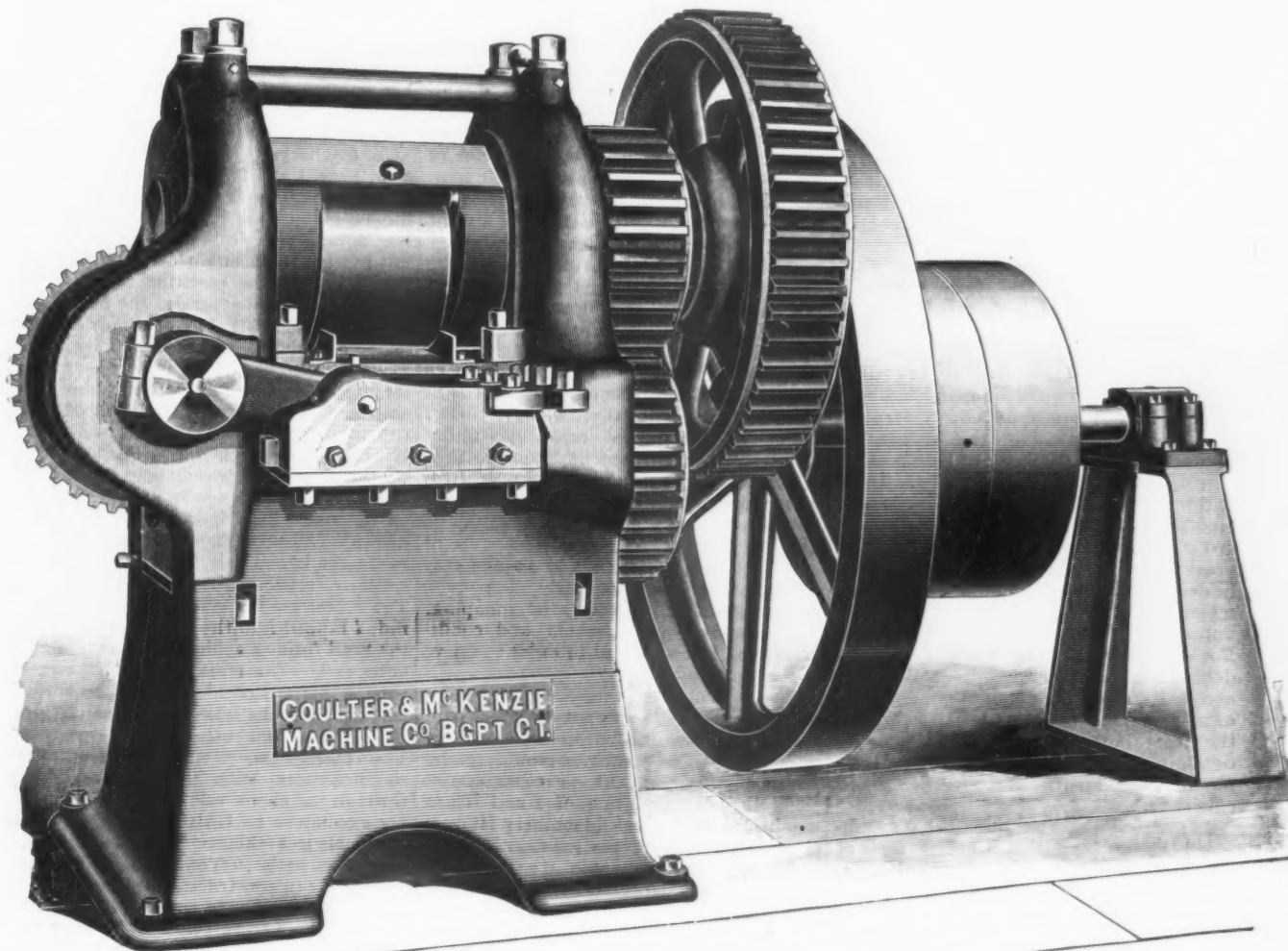
Taper Rolling Machine.

The Coulter & McKenzie Machine Company of Bridgeport, Conn., have designed a machine for rolling flat tapers on round, square and flat bars of steel of large section. Small pieces, such as wagon springs, files, edge tools, &c., are usually tapered under the hammer or with grooved rolls. In the latter case several roll dies are necessary, and an increase in the first cost and cost of repair is the result.

The machine illustrated is fitted with plain flat dies, which work in combination with a squeezing or edging arrangement. The work comes from the machine smooth, with no fin or flash on the edge, and with no sign of the objection-

Each stop is set further back than the preceding one, so as to increase the length of taper. The principle being the same whether the bar is passed once or several times, the number of passes being governed by the amount of stock to be reduced.

After being passed between the rolls the bar is squeezed sideways and shaped as desired by means of a fixed die or a series of dies placed one above the other in the form of steps, the width and shape of these dies varying to produce any required width and shape of taper, all of which is arranged on a slide, which moves upon a plate forming part of the machine, this squeezer mechanism being driven by a pair of bevel wheels from the main back shaft, and is timed with the rolls. The



TAPER ROLLING MACHINE.

hours a day he will be charged accordingly instead of for a full day's service.

Will Be No North Carolina Building.

Ladies of North Carolina undertook to raise \$10,000 with which to erect a State building at the World's Fair. For months they have been endeavoring to secure necessary funds. They now announce their failure. They cannot get the money and hence there will be no North Carolina State Building. This has nothing to do with the State's exhibit, which will be complete. The State Board of World's Fair Commissioners will ask the Legislature in January for \$25,000.

In Pittsburgh legal proceedings will be commenced at once to enforce the local ordinance to prevent the emission of smoke within certain limits. About two dozen establishments have introduced smoke preventers, which cost \$150 per boiler in small plants.

able "cold shuts." With the same dies the machine may be adjusted to taper 6 x 1/4 inch flats, and all sizes of rounds, flats and squares under these dimensions.

The lower roll is adjustable vertically to accommodate the different thicknesses of materials used, up to 1 inch, and is operated by means of large taper keys placed beneath the roll, to correspond with tapered recesses planed into the lower boxes, thus insuring parallel bearings. If more than 1 inch adjustment is desired, thinner dies are used. The rolls are cut away to receive the dies, which are simply plain chilled castings set in and held by keys, and made adjustable with steel set screws in order to produce any taper required.

The bar to be tapered is passed in between the roll dies (just before they come into operative position) and pressed forward until it comes in contact with one of several adjustable stops, where the dies grip the bar and return it to starting point, at the same time rolling the taper.

work is performed quietly, is free from scale or hammer marks, and all ends are tapered alike; therefore where grinding is necessary, the finishing is considerably reduced.

The rolls are 14 inches in diameter, 18 inches between housings, and are geared four to one; the sides or housings are 7 inches thick. The balance wheel is 4 feet 9 inches in diameter, 7-inch face, 3 1/4 inches thick, driven by tight and loose pulleys 30 x 8, the usual speed being about 80 revolutions. The floor space required is 6 x 8 feet, height 5 feet 6 inches, and weight about 7 tons.

This machine is now in practical use at Pencoyd, Pa., Johnstown, Pa., and other points. In some places it produces a taper of 16 inches and under, on 1 1/4-inch round, at the rate of 4000 points a day.

The engineer in charge of the harbor improvements at League Island, Philadelphia, says that \$5,000,000 will be required to complete the work.

Pneumatic Pumping Apparatus.—I.

Under ordinary circumstances, economy and efficiency in the raising of water in large quantities are best attained by means of the modern high-class reciprocating pumps in which the water is handled directly by the piston or plunger without the interposition of other media than the necessary inlet and discharge valves. Centrifugal pumps, on account of their comparatively small size and cost and great simplicity of construction, are well adapted to the handling of large volumes of water at low pressure—say, 10 or 12 feet head—but are totally inapplicable to higher pressures. Thus, for wrecking, drainage of submerged lands, sewage pumping and many other purposes of similar character, they are much used, and in many cases on a very large scale. One of their advantages is that, from the entire absence of valves or moving parts in contact, they are capable of pumping water containing foreign substances, such as sand, gravel, stones, &c., without injury, which would destroy the working parts of a reciprocating pump in a very short time.

Among the earliest examples of the high-duty type is the Cornish engine, which was one of the first applications by Watt of his invention of the steam engine to practical operations, and antedated the crank and fly wheel by several years. The Cornish pumping engine is unique in that in its original conception it embodied principles so nearly correct as to leave very little room for improvement by modern engineers, notwithstanding that it was the production of a time when steam engineering was literally in its infancy. Until within a very few years it may be considered as having been the recognized standard of comparative economy in pumping operations, and it is still extensively used in deep mines and for similar purposes in which it is necessary to elevate large volumes of water under heavy pressure. For such duty, also, the modern types of double acting plunger pumps—both single and duplex—are much used, and as they usually employ compound expansion of the steam, both condensing and non-condensing, they may be considered as capable of good results as to economy and efficiency.

In some mining localities the old-fashioned "draw lift" is used. This form of pump is practically a reversal of the Cornish pattern. In the latter the steam raises the heavy plunger, the weight of which is made sufficient to force the column of water to the required height by gravity alone. The engine is, therefore, single acting. With the draw lift the downward stroke is made, partially or entirely, by the weight of the bucket and its rod and the column of water lifted by the engine. The power is usually applied through the medium of a "bob" or vibrating beam of peculiar construction, and where the mine shaft is not continuously vertical, a V bob is interposed. As this form of pump is extremely simple in its construction, with comparatively little friction on the working parts, almost the entire power of the steam may be utilized in lifting the water and the economy of the pump is, therefore, dependent on the method of producing the power.

Of course all of these different types of vertical pumps require that the water end, or pump proper, shall be placed in the bottom of the mine, at or near the water level, and in a direct or nearly direct vertical line with the shaft. The horizontal plunger pumps, however, may be placed in a gallery or chamber at any convenient point with reference to the sump or well, as they are self-contained and need only the steam and water pipe connections to render them complete. In many instances the depth of mines renders

the pressure due to a continuous lift so great as to necessitate the use of several pumps placed at different levels, and the water is raised by them consecutively until the surface is reached. The difficulty experienced in pumping on a large scale, under very heavy pressures, is not so much a matter of strength in the pump cylinder and reciprocating parts as the great strain on the suction and discharge valves at the instant of closing—the impact of the water column being so great as to necessitate very slow motion of the plunger at the change of the stroke, to avoid damage or excessive wear. In the Cornish pump, as the valves are of large size, they are made very heavy, in order to give the necessary strength. Their breakage is apt to result seriously, as, by relieving the resistance to the tremendous weight of the descending plunger, its momentum becomes so great as to place it beyond control of the engine when end of stroke is reached. In the modern direct-acting type of pump this difficulty has been greatly reduced by the multiple system of valves, in which a large number of valves of small size is used—their combined areas of opening, with slight lift, being equal to or greater than the area of piston or plunger.

With any form of valve, however, the great pressure necessitates much care in the construction and operation of the pumps, and the low piston speed allowable materially reduces the capacity of which they are capable under ordinary pressures. While economy of fuel consumption is, ordinarily, a prerequisite, there are exceptional conditions under which it becomes of secondary importance as compared with efficiency and reliability of operation and peculiar adaptability to the special requirements of the case. It does not follow that a pump capable of very high duty in proportion to the fuel consumption, is necessarily the most economical for all purposes of pumping. All collateral circumstances and conditions must be considered in order to arrive at the net economy.

The pneumatic pumping apparatus shown in the cuts was not designed with a view of its application to all classes of pumping, but only such as would render its economy dependent on other conditions than consumption of fuel. These conditions may be briefly stated as follows: Great capacity in proportion to size of apparatus; perfect adaptability to almost any location, independently of that of the source of power; total absence of the dangerous strains due to heavy pressure, and, from its extreme simplicity of construction, the capability of continuous operation for a long period, without necessity for attention in any way. The cost of construction of the apparatus itself is very small as compared with that of other types of equal capacity, but to this must be added the cost of compression plant, which will bring the figure more nearly in line, though still considerably below that of the Cornish engine. Where the height to which water is to be elevated is so great as to require two or more lifts, the duplication of pumps renders the cost far in excess of that of the pneumatic apparatus, as with the latter the lift may be continuous for almost any head.

Broadly stated, the principle of operation is the alternate displacement, by compressed air, of the water contained in the submerged cylinders, the filling being due to gravity and the reversal automatic. An essential feature of the device is the utilization of the volume of compressed air remaining in the cylinder after all the water has been discharged. Being entirely automatic in its action, it is only necessary to admit the compressed air for starting and shut it off for stopping, as there are absolutely no centers nor dead points at which it could fail to operate. All the

necessary manipulations are performed in the engine room, no matter how remote the latter may be from the apparatus.

The twin cylinders A and A' are made of a capacity to enable them to discharge the given quantity of water by reversing from four to six times per minute. For the larger sizes the shells are made of steel boiler plate, the thickness and riveting being suitable to the required working pressure. The heads C and C' are of cast iron, heavily ribbed, and secured by through bolts and nuts to the external cast-iron flanges D, the latter being double riveted to shells. The base B B, also of cast iron, is made in one piece for sizes in which it would not be too unwieldy. The internal flanges D', riveted to the shells, are bolted to the base by means of studs and nuts. For heavy pressures the joints on the flanges are made on paper or leaden gaskets, though for moderate pressures rubber or other soft packing will answer. In the base and between the cylinders are located the water passages for inlet and discharge. The former is shown at n, Figs. 1 and 2, together with its valve, F. This passage is common to both cylinders, being open at the right-hand end, Fig. 2, and being of sufficient size to admit of very rapid inflow of water. Above the valve seats the partition to which the valves are hinged separates the passages to the two cylinders. The openings k and k' in the cylindrical wall of base (Figs. 1 and 3) are divided as shown merely as a matter of strength. The valves F are, preferably, of bronze and may be faced with rubber or leather in case the water contains abrasive impurities. For clean water they are made to seat directly on the iron. For pumping water containing acids, from which there would be danger of rapid corrosion from galvanic action between the two metals, the valves should be made of malleable iron or steel casting. The valves are hung on continuous hinge rods l tapped into the cross partition, and the head forms a sufficiently tight joint at outer end. The cross partition, shown in Figs. 2 and 3, extends from top to bottom and separates the inlet and discharge sides, both above and below the valve seats. The passage m, divided longitudinally, communicates with the two cylinders through the check valve r and with chamber o (common to both cylinders) through valve G, and thence through discharge pipe E to outlet. The discharge valves G are similar in construction and material to valves F, except as to the manner in which they are hung. As there is no partition between the valves, the single hinge rod answers for both. This rod, shown in Fig. 2, is carried by a deep boss on bonnet—the inner end being supported by a shallow bearing in cross partition. The hinge is similar to the ordinary butt and has a collar between the central lugs, set screwed to hinge bar, and thus holds both valves in position. While in a general way the valves and passages conform to the ordinary practice, they are so modified in design as to provide the unusually large openings necessary to the rapid passage of the water and also to adapt them to locations in which attention may be impracticable. Bolted to the bottom plate of base is a fulcrum, carrying the lever p, upon which are the tank p² and counter weight p¹. The check valve r is hinged to a projection from tank p², and derives its motion in opening and closing from change in position of lever, due to height of water in cylinder. It will be understood, of course, that the two cylinders and contained parts are in all respects alike, although in the drawing all unnecessary duplications were omitted. Attached to cylinder heads the levers i, tank i¹ and weight i² are similar—except as to modifications of shape—to p, &c. The small rod (½ inch diam.), passing through stuffing

box, serves to transmit the motion of levers to bell cranks h and h^1 and piston valve g . It will be noted that the levers are in the extreme opposite positions and the motion is imparted to g by the downward or pulling motion of the lever. The slide valve d is similar to an ordinary steam valve, but has neither admission nor exhaust lap. Upon its back the wing 3 is carried from end to end of the valve. The parti-

1 and 2, are merely round holes drilled from inside of chest, through solid stud, shown in Fig. 2 in inlet e . The central opening from e to cylinder c , Fig. 1, admits the air to central cavity of piston valve. By means of checks, the latter is made to travel for each stroke only so far as the position shown, which admits air from the central port through valve cavity and small port, into space between parti-

noticed that the two cylinders are connected at bottom by the continuous base casting, and at the top by the air valve chest, &c., so as to form a perfectly rigid construction, which may safely be set upon any foundation sufficiently strong to bear the mere dead weight.

In setting, the apparatus should be submerged so as to bring the water level about to top of cylinder heads. Prior to

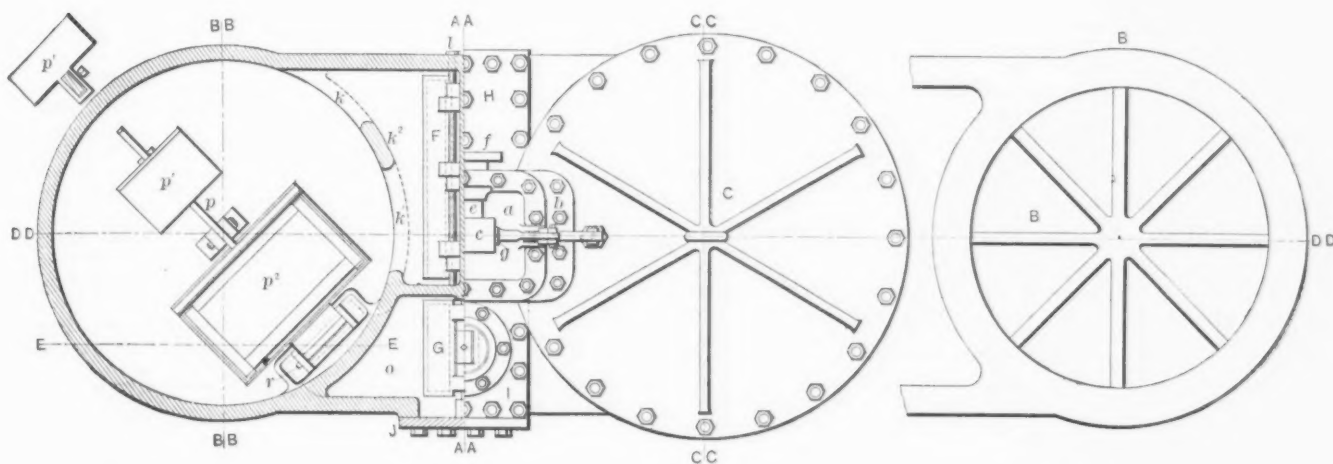


Fig. 3.—Horizontal Section on F.

Plan.

Fig. 4.—Bottom.

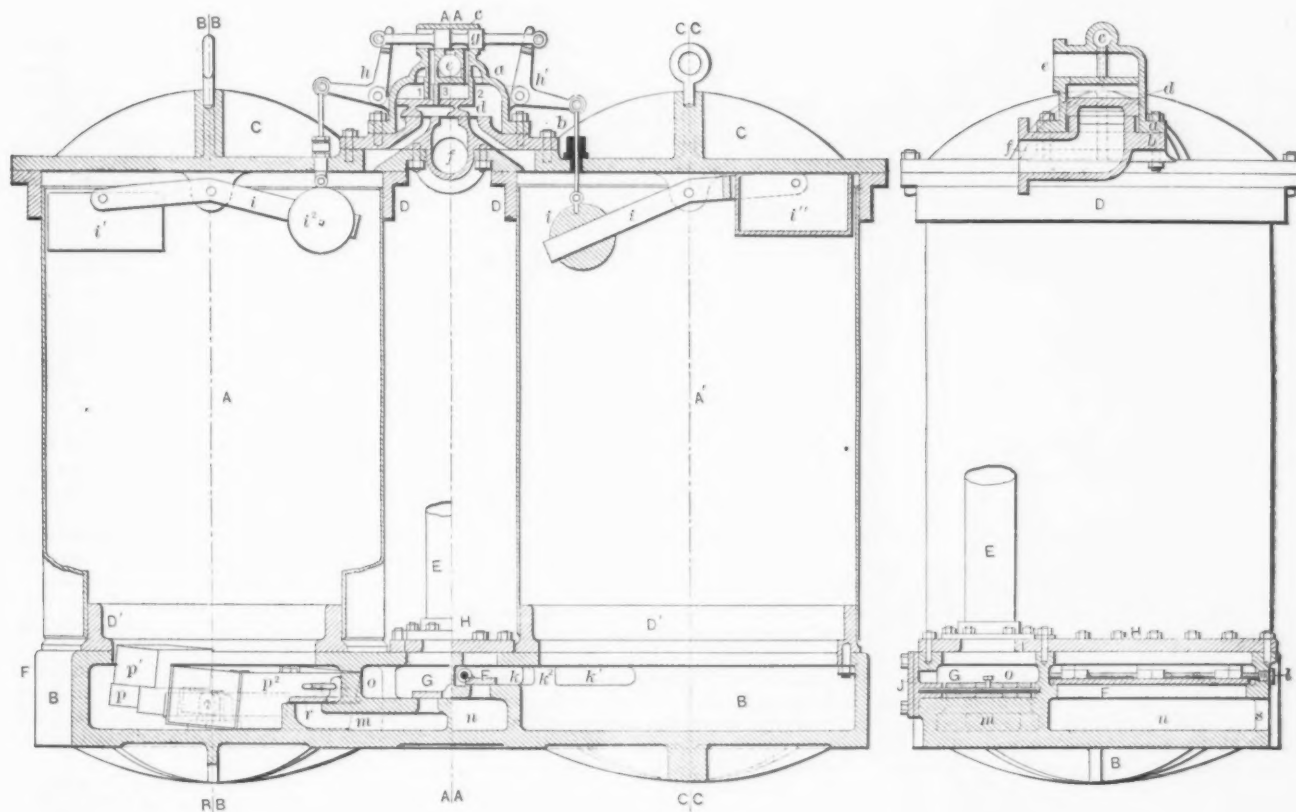


Fig. 1.—Upper Section D D, Fig. 3, and Lower Section E E, Fig. 3.

Vertical Section D D.

Fig. 2.—Upper Part Section A A.—Lower Part Quarter Section I.

THE PNEUMATIC PUMPING APPARATUS.

tions 1 and 2 extend entirely across valve chest a , forming a chamber which is closed at bottom by valve d . The air ports in valve seat b communicate with the two cylinders as shown and serve for admission and discharge of the compressed air. The exhaust port is shown in connection with flanged nozzle f . The opening e admits the air to valve chest through the two ports at partitions 1 and 2. The two small passages connecting the piston valve cylinder c with space between

tion 2 and wing 3, while space on opposite side of 3 is open to the atmosphere, through small port, rear end of valve. The bell cranks h and h^1 give motion to the valve in the forward or pulling direction only, by engaging the pin on end of valve stem, but are free to move in the opposite direction without disturbing position of valve. The nozzles e and f connect by means of wrought iron pipes directly with discharge and suction valves of compressor, respectively. It will be

admitting the compressed air the cylinders will, of course, both be entirely filled with water, and the piston valve in almost any position, as the actuating levers i will both be in position to throw the bell cranks outward as shown at A^1 , thus by counterbalancing each other leaving the valve in a random position. The slide valve d , however, will be in position to admit air to one or the other of the cylinders, which we may suppose to be A^1 , as in the drawing. The lever p in bottom will be in the re-

verse position to that shown in A, and therefore the check valve *r* will be raised from its seat, leaving the passage *m* open to the under side of discharge valve G. As soon as the air is admitted its pressure forces the surface of the water downward, raising valve G and discharging through pipe E. When the surface has fallen to a point near bottom of tank *i*² on upper lever, the former will overbalance the weight *l*¹ and cause it to rise and throw the bell crank inward, leaving the piston valve undisturbed. As, however, the now unbalanced weight on lever in tank A is pulling at the other end of valve, it will very promptly shift over to the opposite position, with the following result: The small port admitting air through piston valve will be open to the atmosphere, and the air on that side of wing 3 exhausted, while the central cavity of valve will establish communication with the opposite side of wing through the port on that side, and thereby shift the main valve *d*. This will exhaust the pressure from cylinder A¹ and admit air to A, when valve *r* being already open, the water is forced out. When it has fallen sufficiently to allow *i*¹ in A to drop, the bell crank *h* will throw inward, but without shifting the piston valve. Meantime, the cylinder A¹, through exhaust pipe *f*, has been put in communication with suction valves of compressor, and the air is received by the latter, and its entire pressure saved.

At each stroke of the piston a corresponding volume of air is taken from the cylinder and the pressure falls until it is finally reduced to that of the atmosphere, when the water will enter the cylinder. When it has reached the level of top of the depressed tank *i*², the latter will rise, causing bell crank *h*¹ to move outward and shift the piston valve, thus again reversing the operation. As the discharge of water is slightly more rapid than its inflow, it will be seen that after a few reverses the action of machine will become normal—i. e., the water will be entirely displaced in one cylinder before the other is filled sufficiently to cause reversal. The fact is obvious that without some provision to prevent it the air would follow the water into discharge pipe until the reversal took place. This is the function of check valve *r*. When the water has fallen to within about 1 inch of valve seat, the falling of tank *p*² closes the valve, which the pressure will cause the water to seal perfectly against loss of air. After the next reversal, upon the air pressure being reduced and the water flowing in, the lever *p*, with its tank and weight, will shift as soon as submerged, thus lifting valve *r* ready for the next discharge.

As the relative velocities of inflow and discharge can be very readily adjusted, the check valve becomes a mere safeguard, and a continuous, uninterrupted flow of discharge is maintained. This regulation being made by means of the throttle or valve in the engine room, admitting air to the supply pipe, it is very easily accomplished, it being only necessary to cut down the pressure gradually until the stream becomes steady. As to the effect of the pressure on the inlet and discharge valves, it is readily apparent that the claims in this respect are valid. At the instant of reversal the pressure on both sides of the discharge valve is the same, and no matter how great it may be the valve is in equilibrium, and closes by gravity alone. So, also, with the inlet valve; as soon as the level of the inflowing water reaches the height necessary to cause reversal the valve drops, because the cylinder is full, and the valve has ample time to become fully closed before there can be any appreciable pressure on the water. The only strain, therefore, upon the valves is that due to the pressure after they are seated, which, obviously,

can have no appreciable effect. This feature constitutes one of the most important points in the matter of durability and reliability, as in all classes of pumping machinery the valves are the bugbear, if subjected to heavy pressure. The feature next in importance is the reliability of the gravity reversing mechanism. Many devices of the kind work admirably on the start but become unreliable, or give out entirely in a short time—rather an awkward matter in such a connection as the one under consideration. Let us see if this one may be subject to such contingencies. Of course, there can be nothing questionable about the lever and weight: they are fixed facts. How then about the tank *i*¹? It is simply a cast-iron open-top cylindrical tank, attached by trunnions to the lever, and filled with water from the inflow. This appears to be about as reliable as the lever and weight. As to its principle of action, it may be briefly described as two weights of greatly different specific gravities deriving motion from the changes of water level. Suppose the net weight necessary, with safe margin, for shifting the small piston valve (1½ inches diameter) be 20 pounds, and the same be allowed for return movement of bell crank. We will then make the counterweight 60 pounds and the tank 40 pounds, the difference being 20 pounds in favor of weight, available for moving a balanced valve and overcoming the slight friction of the stuffing box and pin bearings. The tank is made of a size to hold exactly 40 pounds of water, which, together with weight of tank, makes 80 pounds, or 20 pounds in excess of counterweight. When the water level in cylinder is below the bottom of tank the entire weight of the latter and its contained water is acting against the 60-pound weight. But as soon as the water rises sufficiently to completely submerge the tank the weight of water in the latter is entirely neutralized, and consequently the 20 pounds excess is transferred to the counterweight and the valve shifted. As the water level falls the latent weight again becomes sensible and causes the idle stroke of lever. As any deficiency of the quantity of water in tank will prevent reversal the inflow will necessarily continue until the cylinder is completely filled and the tank submerged, thus absolutely insuring against failure from this cause. The bottom lever and attachments for actuating the air check *r* are simply a modified form of the device, in which the valve is raised by the counterweight P¹ and closed by tank P². The moving parts of the air controlling mechanism are made of non-corrosive material, and ample lubrication of the piston and main slide valves can be supplied periodically, through the air pipe, in the same manner as in the steam engine. As regards the capacity of the machine, it is clearly but a matter of sufficient size and strength in the parts subjected to strain, and the necessary pressure of air, to enable it to elevate a given quantity of water to any height within reason. Owing to the continuous flow and the entire absence of shock or jar of the water column in discharge pipe, the danger of burst pipes and joints or broken valves is entirely obviated, and the strength of parts may be calculated from known quantities.

(To be continued.)

Norton Brothers' new tin-plate works at Maywood, Ill., have been delayed by various unimportant but vexatious details far beyond the time when they were expected to be in active operation, but matters are now rapidly getting into proper condition and in two or three weeks the plant will be running in good shape. The tests of the machinery which have been made from time to time have been emi-

nently satisfactory to the inventor, Edwin Norton, who has found no reason to modify the principles upon which it has been constructed.

Tariff Bills of the Fifty-Second Congress.

Some interest attaches to the measures introduced in the House during the last session of Congress with special reference to changes in the duties on iron and steel and allied interests.

Mr. Andrew introduced a bill on January 5, 1892, No. 198, "To admit coal and iron ore free."

Mr. Blanchard's bill, No. 170, introduced January 5, 1892, calls for "Placing barb wire and iron rods for fencing on the free list."

On the same date Mr. Watson introduced a bill, No. 83, "Providing for the removal of duties on jute bagging, jute, iron ties and binding twine."

Two days later bill 645 was introduced by Mr. Enloe "Placing barb wire on the free list."

A third bill calling for the "placing of barb wire and iron rods for fencing on the free list," was introduced on January 15, Mr. Bryan. It bears the House No. 3860.

On February 1, 1892, Mr. Stout introduced the bill No. 5091, "Providing for the free admission of copper in the form of ores, old copper, copper clippings, all composition metal of which copper is a component material of chief value, regulus of copper, black or coarse copper, copper cement, copper in plates, bars, ingots, Chile, or other pigs, and in other forms not mentioned." The bill provides also that "all copper imported in the form of rolled plates called braziers' copper sheets, rods, pipes and copper bottoms, also sheathing or yellow metal of which copper is the component material of chief value and not composed wholly or in part of iron ungalvanized, there shall be paid a duty of 20 per cent. ad valorem."

On the 27th of May Mr. Stevens introduced House bill 9027, which provides "That on the first day of October, 1892, iron ore, wrought and cast scrap iron and scrap steel be admitted duty free." "That on and after October 1, 1892, pig iron, spiegeleisen, ferromanganese and ferrosilicon be subject to a duty of one and one-half tenths of one cent per pound." "That on and after the same date bar iron, beams, girders and all other articles enumerated and provided for in paragraphs 135 and 137 of the McKinley bill be reduced to five-tenths of one cent per pound." "That iron or steel rails and all other articles enumerated in paragraph 141 be reduced to three-tenths of one cent per pound," and finally "That no rates of duty be imposed upon the articles enumerated in the Metal Schedule that the duty shall exceed 53 per cent. ad valorem."

On July 16 Mr. Whiting introduced House bill 9566, providing "That from and after the passage of this act there shall be paid upon beams, girders, joists, angles, channels, car-truck channels, T columns and posts, parts or sections of columns or posts, deck and bulb beams, and building forms, together with all other structural shapes of iron or steel, whether plain or punched or fitted for use, also armor plates, and all iron or steel forgings used in the construction of ships, also cast-iron pipe of every description, nine-tenths of 1 cent per pound."

The Cornell dam, to be built on the Croton River, to increase the water supply of New York, will cost \$4,000,000. The preparatory work, which is now well started, will occupy three years, and in seven years, according to the contract, the structure will be complete.

The Worthington Sectional Water-Tube Boiler.

The Worthington boiler belongs to the sectional class, in which the water is contained in small tubes and chambers, designed to secure the important requisites of safety, durability, accessibility and high evaporative efficiency, and is designed to be economical of valuable space and at the same time to be of liberal proportions in grate area and heating surface. The interior of the entire construction, in every part and detail, is accessible from the outside for examination, cleaning or repair. The furnace extends under the entire boiler and is of proper height to permit the use of any kind of fuel. As will be noted, upon reference to the engravings, the tubes are arranged in transversely inclined series of several tubes per section.

The heating surfaces and water ways are so arranged that the movement of the

Outside the furnace, opposite each end of each tube, a hand hole of proper size to admit a tube or a tube expander is provided and fitted with a cap held to place with a cross bar and bolt. This cap is accurately faced and ground to a perfect steam and water-tight joint. The caps are exposed upon opening the side doors and can be examined or tightened if necessary. Upon removal of a cap, the internal condition of a tube is open to inspection, to cleaning, or, in case of leakage in the expanded joint, to re-expansion. And in case of accident to a tube or depreciation due to long usage, a new tube can be substituted with but little trouble and delay. Each end of each mud drum is provided with a removable cap accessible from outside.

The furnace is lined with fire brick. The only other brick work required to erect a stationary boiler consists of two foundation walls of proper depth, rising above floor level about 12 inches.

year, 257. In number of officers licensed, 1404. Total number of lives lost by accident and other causes, 200, of which 86 were from accidental drowning; decrease in loss of life over preceding year, 138. The present steamboat laws have stood the test of 20 years and their statutory operation appears to be demonstrated by the comparative exemption from disaster which now attends steamboat travel, so that it is safer than railroad travel or any other mode of transportation.

The William Penn Statue at Philadelphia.

The mammoth statue of the founder of Pennsylvania which is to adorn the summit of the great tower of the Philadelphia Public Buildings has been completed. It

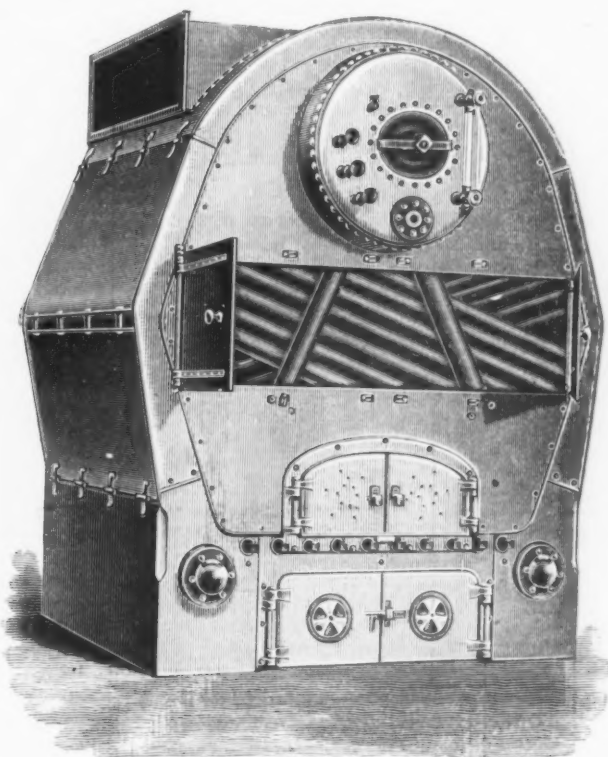


Fig. 1.—Boiler Complete.

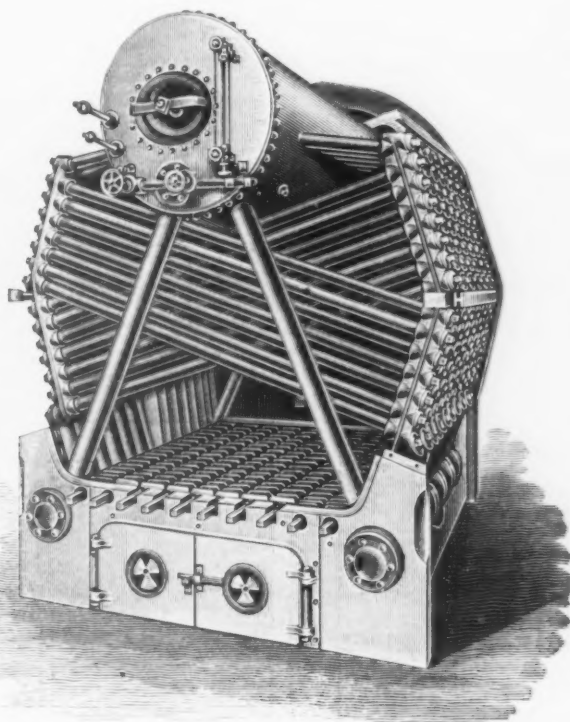


Fig. 2.—Boiler with Casing Removed.

THE WORTHINGTON SECTIONAL WATER-TUBE BOILER.

water contained in the boiler is constant and rapid. Its course is as follows: From the steam-and-water drum located above the tubes, into which water is fed, it descends the water legs, four in number, placed outside the furnace, to the water-and-mud drums, at the base; thence it passes via the tube connections into the lower series of headers; thence through the tubes, over the fire, into the upper series of headers; thence via the tube connections into the steam-and-water drum again (from whence it started). The proportion and combination of parts throughout the boiler is such that expansion and contraction due to changing temperatures can occur without straining or disturbing the position of any part or system of parts.

The tubes being short, tubular expansion is reduced to a small fraction, as compared to that which is due to the employment of tubes of 16 to 20 feet long.

The headers for tubes are made of steel or iron, according to the service required. They are placed closely together side by side, forming complete side walls to the furnace and affording a limited amount of effective heating surface.

These boilers are proportioned and rated for generating power on the basis of the Centennial standard, namely, the evaporation of 30 pounds of water, at 70 pounds pressure, from temperature of 100 degrees, to be 1 horse-power. Said duty to be accomplished with a consumption of anthracite coal of good quality at the rate of 12 pounds per hour per square foot of grate with good natural draft. It is claimed that the actual steaming efficiency and also the ultimate capacity are largely in excess of the rating on the above basis. A 100 horse-power boiler of this kind occupies a floor space $7\frac{1}{2}$ feet square and is less than 10 feet high. These boilers are made by the New York Safety Steam Power Company of 30 Cortlandt street, New York.

The annual report of Supervising Inspector General of Steam Vessels for the fiscal year ending June 30, 1892, shows that the total number of steam vessels inspected was 7661. Total number of officers licensed 36,520. Increase in number of vessels inspected over the preceding

was set up last week in the courtyard of the city hall, where the figure will probably remain until such time as the superstructure is placed and in a condition to receive it. The principal dimensions of this important work of art were given in a former issue. It is undoubtedly one of the largest statues ever made, and from an artistic point of view eminently satisfactory. Large crowds have daily viewed it in its finished state, and great encomiums are passed on its artist, A. M. Calder, and the Tacony Iron & Metal Company, at whose foundry the Penn statue was cast and finished. The heavy iron dome on which it will eventually stand is now erected in the yard of the Tacony Iron & Metal Company at Tacony, Philadelphia, and when it has received its aluminum plating, will be transferred to its destination on the crown of the tower. Work on the fabric has been pushed forward with great celerity, and the various portions are being delivered rapidly. When complete the tower will, with the sole exception of the Eiffel, be the most lofty erection of human handiwork in existence on the earth. Its height will reach a measurement of 547 feet.

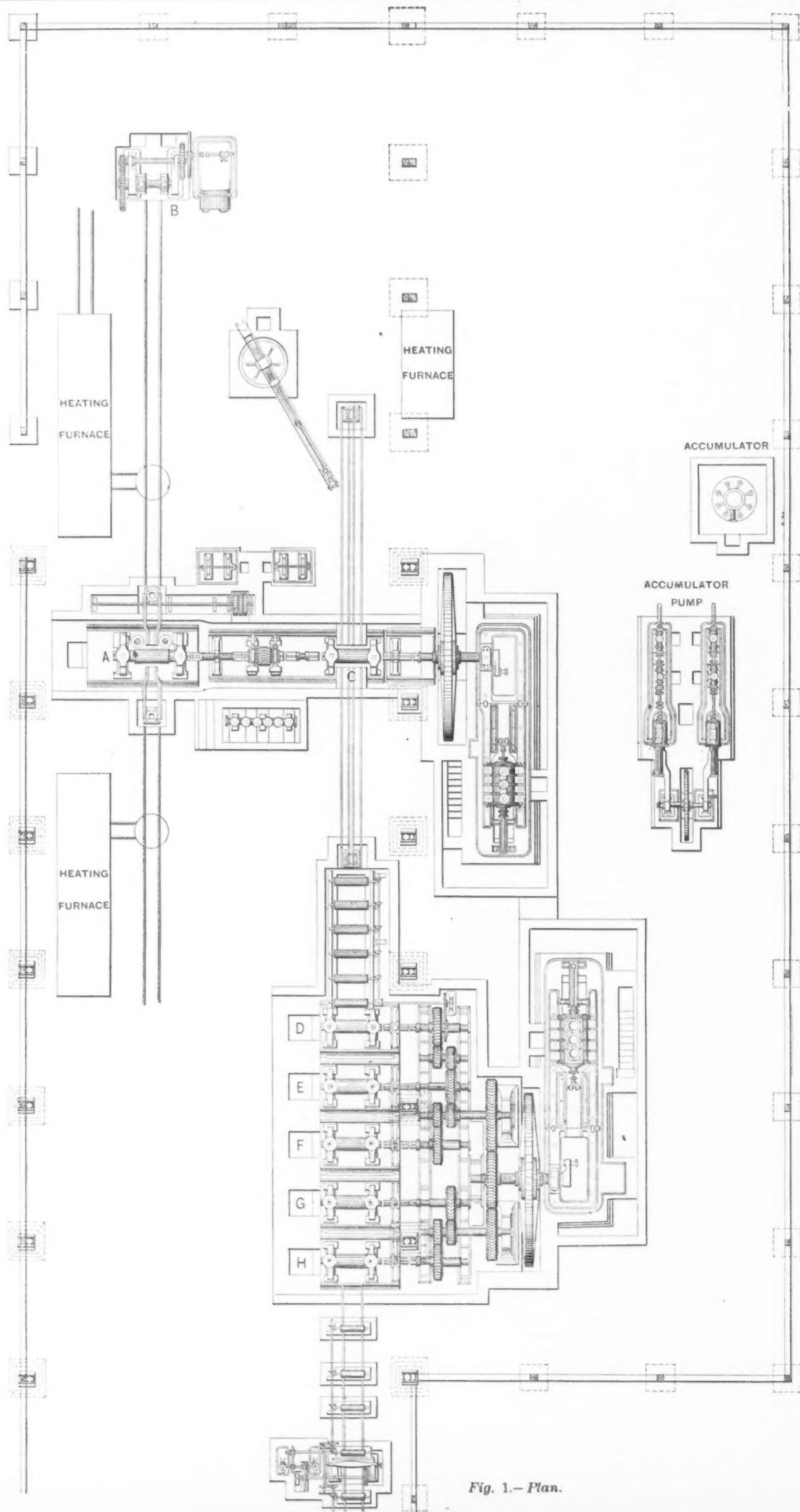


Fig. 1.—Plan.

THE WITTGENSTEIN SHEET MILL.

The Wittgenstein Sheet Mill.

Stahl und Eisen has just published a description and drawings of a sheet mill which promises to have a very important effect upon the development of this line of rolling mill practice. Alfred Trappen of Honnef-on-the-Rhine gives the following data relating to the mill built by Karl Wittgenstein of Vienna, at the Rudolfshuette, near Teplitz, at a great deal of expense and a very considerable risk. He is well known to those American metallurgists and iron manufacturers who have visited Austria as the most progressive man in that country. The mill in question has now been running for a number of months and has a record of making 30 tons of fine sheets in 24 hours without having reached the full capacity of the plant.

The idea underlying the plan was to get around the steel slab, because its production is very expensive, and because in rolling it a plate is obtained with irregular edges which must be sheared off and causes a heavy loss of material. The start

train and the Lauth plate train, only one of these trains being in operation at the time, so that the entire power is available for each of them. The second engine has a diameter of cylinder of 39.37 inches and a stroke of 55.12 inches, and drives five two high trains. Both operate with a pressure of 135 pounds and are engines of special design.

The universal three-high train A, Figs. 1 and 2, has 24.8-inch steel rolls. Although high speed in rolling has little importance in this part of the process, the train is provided with all facilities for quick work, the raising and lowering of rolls, etc., being attended to automatically. The wabblor is raised and lowered hydraulically and by means of a car the slab is transferred from the universal mill, where it is rolled down to a thickness of 1.97 inches, to the shears B, Fig. 1.

The plate, which is still pretty hot, is again put into a heating furnace and is carried up to the highest admissible heat, because the rolling must be carried on with the highest speed from this point on. The plate is turned over by an ingenious apparatus, very rapidly, in order to give

for subsequent work, it is being marketed largely as a final product. The material for the fine sheet rolls is therefore a sheet 0.059 to 0.0787 inches thick, with straight sides which will call for very little waste or shearing. Its cost is not supposed to be as great as that of making sheet bars.

Metal ties in Belgium do not appear to have met with unqualified success. The Belgian State railways have for five years been testing the relative values of metal and wooden ties. Official reports of the tests state that it was very difficult to keep the track laid with metal ties in good shape, particularly as the stone ballast under them was gradually pulverized. The ties themselves were much damaged after five years' wear by cracks starting from the bolt holes. Up to the time of making the reports from which these facts were taken, the track laid with metal ties had cost for maintenance about 19 times as much as the track laid with creosoted oak ties, and many of the metal ties were so badly damaged that they would soon have to be removed. In Aus-

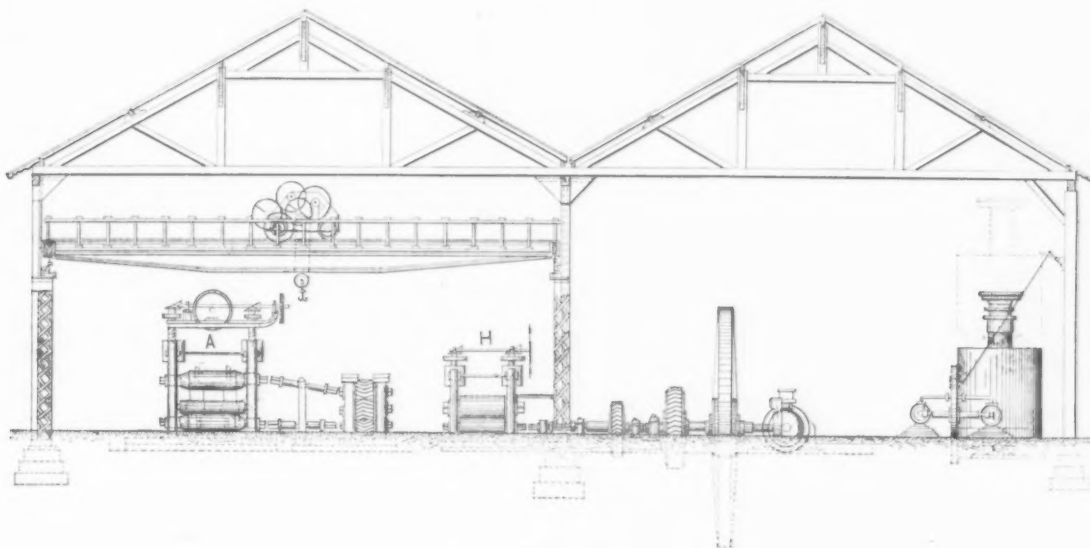


Fig. 2.—Elevation.

THE WITTGENSTEIN SHEET MILL.

was to be made with an ingot 15.75 inches wide, 11.81 inches thick and 23.62 inches long, from which a plate was to be rolled 1.97 inches thick and 39.37 inches wide, the ends to be sheared. The plan contemplated the use of a three-high universal mill with heavy vertical rolls for the manufacture of this plate, the idea being to exert pressure on all parts of the ingot. The hot plate was to be passed into a heating furnace and then be rolled further on a second train. The latter was to be a combination of a Lauth train with a number of two-high trains driven at increasing speed. The final product aimed at was a plate 0.059 inches thick, to be used as the raw material for the subsequent manufacture of the finer grades of sheets. The work of developing this plan was submitted to Mr. Trappen, with whom was associated Mr. Schneefuss, the manager of the works. The result was the building of the mill shown in the accompanying engravings:

The fact was recognized at the outset that the direct rolling of an 11.81-inch slab or ingot down to 0.059-inch sheet would call for a heavy expenditure of power and that the trains would have to be run at very high speed. Therefore two engines were adopted, the first of them having a 34.29-inch cylinder and 49.21-inch stroke. This drives the three-high

an opportunity to speed off the scale, and then is delivered to the Lauth train, C, in which it is brought down under heavy pressure in a few passes to 0.197 inch. The plate is delivered from a roll table to the five two-high trains, D, E, F, G and H, which are driven at increasing speed.

A very few minutes suffice to do the rolling on the Lauth and on the two-high trains, the sheet leaving the fifth pass with a thickness of 0.059 to 0.079 inches and a length of 130 to 160 feet. A roller table 164 feet long receives it. At two-thirds of its length a shear is provided which cuts it into lengths of 46 to 56 feet. In our plan a part of this table only is shown, the shear being brought up closer to the train in order to indicate its position.

The rolls of the Lauth train and of the two-high train are 24.80 inches in diameter and require only very few men. The five two-high trains need only one man, who regulates the position of the rolls, but the workmen on the Lauth train accompany the sheet in its passes through the two-high train. There was some uneasiness as to whether the plate after leaving the Lauth train could be readily guided straight through the five two high trains. The arrangements provided, therefore, have proved very satisfactory. The plate has straight, clean edges and is so smooth that instead of serving as the raw material

for subsequent work, it is being marketed largely as a final product. The material for the fine sheet rolls is therefore a sheet 0.059 to 0.0787 inches thick, with straight sides which will call for very little waste or shearing. Its cost is not supposed to be as great as that of making sheet bars.

The *Times'* St. Petersburg correspondent gives an account of some armor plate tests recently made in the presence of the Russian Minister of Marine and Grand Duke Alexander. The material tested consisted of one compound plate made by Brown, of Sheffield, two steel plates made by Cammell, of Sheffield, and one steel plate from the French St. Chamond Company's works. All of the plates were ten inches thick. The plate from St. Chamond Works stood the test without being cracked. One of the Cammell plates was slightly cracked and the others were shattered to splinters.

A schedule of four and a half hours between New York and the National Capital is contemplated.

Pittsburgh Freight Rates.

A meeting of the Pittsburgh Chamber of Commerce Committee on Transportation and Railroads was held in that city on Friday, the 25th ult. This committee was formed some time since for the purpose of investigating certain discriminations in freight rates which are said to be made against Pittsburgh shippers. A table of freight rates prepared for the use of the committee, giving rates in cents per hundred pounds between different cities, was presented as follows:

M		1	2	3	4	5	6
149	Pittsburgh to Titusville	30	25	20	13	10½	9½
159	Cleveland to Titusville	22	19½	14	10½	9½	8
113	Youngstown to Titusville	21	18½	13½	10	8½	7½
119	Buffalo to Titusville	21	18½	13½	10	8½	7½
142	Cleveland to Oil City	22	19½	14	10½	9½	8
132	Pittsburgh to Oil City	30	25	20	12	8½	7
239	Cleveland to Salamanca	22	19½	14	10½	9½	8
290	Pittsburgh to Salamanca	30	25	20	13	10½	9½
238	Cleveland to Bradford	27½	24	17½	13	11½	10
230	Pittsburgh to Bradford	30	25	20	13	10½	9½
320	Pittsburgh and Buffalo to Fort Wayne	37	34	25	17	15	12
222	Buffalo to Akron	22	19½	14	10½	9½	8
135	Pittsburgh to Akron	25	22	20	13	9	8
156	Cleveland to Butler	25	22	20	13	9	8
40	Pittsburgh to Butler	30	16	13	8½	7½	7
117	Cleveland to Mercer	16	13	11	8	7	6
80	Pittsburgh to Mercer	18	16	15	10½	8	7

A communication from a prominent steel manufacturing concern of Pittsburgh was received and reads as follows:

As a distributing point Pittsburgh occupies a position second to no city in the United States. The total tonnage from and to it amounted to 39,443,201 tons in 1890. Of this amount the railroads carried 34,638,316 tons and 4,804,885 tons were moved by river. In addition to these figures the local tonnage was 19,124,350 tons, making in round numbers 1,000,000 carloads of freight during the year, or an average of 3000 cars daily. In other words, 2000 loaded freight cars enter and 1000 loaded cars depart daily, equal to 40,000 tons received and 20,000 tons distributed daily to all points from the Atlantic to the Pacific.

Of the pig iron, rolled iron, crude steel and steel rails manufactured in the United States, Pennsylvania contributed 10,950,103 out of a total of 20,013,720 tons. Out of this total Pittsburgh produced over one-third of the output of Pennsylvania, or one-fifth of the entire production of the United States.

The capital invested in iron and steel was \$56,845,000, or over one-fourth of the entire capital represented in the two cities. The number of persons employed was 38,935, paying yearly in wages \$30,265,264. With this vast array of figures before us, the question naturally occurs: Are our interests in the way of the proper adjustment of freights, as compared to other localities, properly looked after by the shippers and, secondarily, by those of the railway men who have these matters to attend to?

So far as the shippers are concerned, our experience shows a woeful lack of self-interest on their part. Other cities, such as we come into competition with almost daily in the markets, are able to obtain advantages such as were not even hoped for hitherto by us. Orders which we bid upon leave us, and new fields for others are opened, in which our best efforts fail to obtain a market.

A careful investigation of the matter shows a disposition on the part of the manufacturer and shipper at competing points to look after their interests by harmony of action and by paying a competent man to look after them. Some such action is imperative, and we cannot too strongly recommend the advisability of the Pittsburgh shipper doing likewise, and at once.

A comparison of the tariffs prepared by the railway men shows concerted action on their part, and we now come to some few of the "facts and figures" gathered from this source. The

map of the Pennsylvania system of railroads shows Pittsburgh to be half way between New York and Chicago. Of the total distance (455 miles to New York and 468 to Chicago) of 923 miles, the rates are:

	1	2	3	4	5	6
New York to Chicago	75	65	50	35	30	25
Pittsburgh to Chicago	42½	37½	27½	20	17½	15
New York to Pittsburgh	45	39	30	21	18	15

Why Pittsburgh should be charged for more than one-half the rate, we leave our railroad agents to answer. This, too, in view of the fact that the rates from

	1	2	3	4	5	6
New York to Buffalo ..	39	33	28	19	16	13
Buffalo to Chicago	42½	37½	27½	20	17½	15

The fact that the distance from Pittsburgh to Chicago is 468 miles against 540 miles Buffalo to Chicago should in our opinion give Pittsburgh some advantage.

We notice also that the rates from New York, Buffalo, Erie, Cleveland and Youngstown to Milwaukee are made on the same basis as the rates from Buffalo to Chicago, while from Pittsburgh to Milwaukee the rates are higher, as follows:

	1	2	3	4	5	6
Pittsburgh to Chicago ..	42½	37½	27½	20	17½	15
Pittsburgh to Milwaukee ..	48½	42½	31½	23	19½	17
Increase	6	5	4	3	2	2

We will, however, close by giving one other illustration, as time forbids our giving all or a small part of such as come to our notice. That is:

	1	2	3	4	5	6
Buffalo to Grand Rapids ..	41	36	26½	19	17	14½
Pittsburgh to Grand Rapids	42½	37½	27½	20	17½	15

The distance being 515 from Buffalo and 462 from Pittsburgh to Grand Rapids.

It is intimated that this committee will ask that the freight agents of the various railroad lines centering in Pittsburgh be asked to furnish information to the Chamber of Commerce relating to the discrimination which is said to exist. Another meeting of the committee will be held in the near future.

Cleveland as An Industrial Center.

The new pamphlet concerning the industries and general advantages of the city of Cleveland, issued by the Board of Trade, will soon be ready for distribution. It is authority for the statement that Cleveland capital controls 80 per cent. of the vessel property employed in the ore-carrying trade. What has been done in cheapening transportation costs on ore is made plain by the statement that in 1867 the average freight per ton of ore from Escanaba to Cleveland was \$4.75; in 1870, \$2.50; in 1891, 84 cents; and charters were made in the season as low as 55 cents. On July 1, 1892, there were owned in Cleveland 40 steel vessels, with a registered tonnage of 69,317, and an aggregate insurance valuation of \$7,119,000. The actual value of the 289 vessels, aggregating 223,849 gross tons capacity, owned in Cleveland July 1, was \$17,000,000.

There are 16 miles of river frontage here, 5 miles of which are built up in docks. On river and harbor improvements the Government has spent in all \$1,563,999.86, of which amount \$1,167,118.25 went for the construction of and repairs on the breakwater.

The capacity of Cleveland's blast furnaces and iron and steel works makes possible the production each year of 275,000 net tons of pig iron, 545,000 tons of Bessemer and open-hearth steel blooms, billets

and slabs, 288,000 tons of wire rods, 108,500 tons of merchant bars and shapes and 210,000 tons of plates, axles and iron and steel forgings. The 125 establishments in Cleveland working in iron and steel turned out in 1890 products valued at \$47,364,766, and employed 17,465 hands.

Cleveland's jobbing business is put at \$48,000,000 a year, dry goods leading with \$9,000,000; groceries, \$8,000,000; produce, \$4,750,000; hardware, \$4,000,000; merchant iron and steel out of store, \$3,250,000. In its bank showing the report gives emphasis to Cleveland's financial strength. Fifty banks have a combined capital of \$15,382,102, with a surplus of \$5,760,283, and deposits, on April 1, of \$93,381,381.

From 261,353, according to the census of 1890, Cleveland's population has swelled to 309,243 in 1892, according to an estimate, the number of names in the directory being multiplied by three.

The Naval Architects and Marine Engineers.

The most prominent and influential men in the shipbuilding and shipping interests of the United States have completed the preliminary organization of a professional society of high standing, to be called the "Society of Naval Architects and Marine Engineers," whose object will be to promote the art of shipbuilding in all its branches, both commercial and naval. The committee of organization, consisting of William H. Webb of New York, Lewis Nixon, general manager of Cramp's Shipbuilding Company, of Philadelphia; Col. E. A. Stevens of Hoboken, Francis T. Bowles, naval constructor, United States Navy, and Clement A. Griscom, president of the International Navigation Company, expect to incorporate the society in New York, and are now sending out invitations to membership, hoping to have the first meeting at the time of the naval review next spring.

The list of those who have accepted places in the preliminary organization includes many well-known names from all sections of the country. The president is Clement A. Griscom; vice-presidents, Theodore D. Wilson, Chief Constructor of the Navy; Charles H. Cramp, George W. Melville, George W. Quintard, Irving M. Scott, Gen. Francis A. Walker and W. H. Webb. The members of the council include H. T. Ganse, Wilmington, Del.; Gen. F. W. Wheeler, West Bay City, Mich.; W. S. James, Bethlehem Iron Works; Gen. T. W. Hyde, Bath, Maine; J. W. Miller, New York; C. H. Orcutt, Newport News, Va.; Nathaniel G. Herreshoff, Providence; J. F. Parkhurst, Cleveland, Ohio; Naval Constructors Hichborn and Bowles of the Navy; Charles H. Loring, Captains Sampson and Chadwick of the Navy, and Harrington Putnam of New York. W. L. Cappa is secretary and treasurer.

In view of the increasing importance of American shipbuilding interests and the development of the navy, the organization of this society upon a basis similar to that of the civil engineers and kindred professions is regarded as opportune and having a valuable and extended field of influence in technical subjects and public affairs.

The American Minister to Mexico, Mr. Ryan, favors the removal of all restrictions upon our trade with that country, so far as practicable. He has not been able thus far to realize his ambitions in this respect and does not see how reciprocity arrangements can be made while Mexico and other Southern countries are in such urgent need of all their revenue from customs duties.

The Von Mengerlinghausen Steam Engine.

The steam engine, engravings of which we present, is the design of W. H. Von Mengerlinghausen, superintendent of the engine department of the A. B. Farquhar Company, Limited, of York, Pa. The valve gear is such that, by means of an automatic shaft governor, the cut-off can be varied from one-twentieth to nearly seven-eighths of the stroke. Further than this, the cut-off is varied by the time and not by the length of travel

F F' are connected by the rod S to the fixed eccentric.

The operation of the device is as follows: As the shaft revolves the shifting eccentric imparts a vibratory motion to the wrist plate, causing the grooves H¹ H² to swing through arcs of circles. When the rollers are in the lower portions of the grooves, the radius of curvature of which has the same center as the axis of vibration, there is no lengthwise motion of the valve rods and the valves are not moved. But when the rollers are passing between the curved surfaces the valve rods will be given a rapid motion, causing the valves to open

between the ports (to prevent reopening after closure or reclosure after opening) to an extent which will materially reduce the degree of port capacity relatively to a given valve area.

Russia has added to her navy one of the most remarkable war vessels afloat, the great ironclad "Rurik." She was launched on the Neva on November 3. She is the longest ironclad of all the great navies of Europe. She measures 435 feet from stem to stern, is 67 feet breadth of beam, 25½ draft, and 10,933

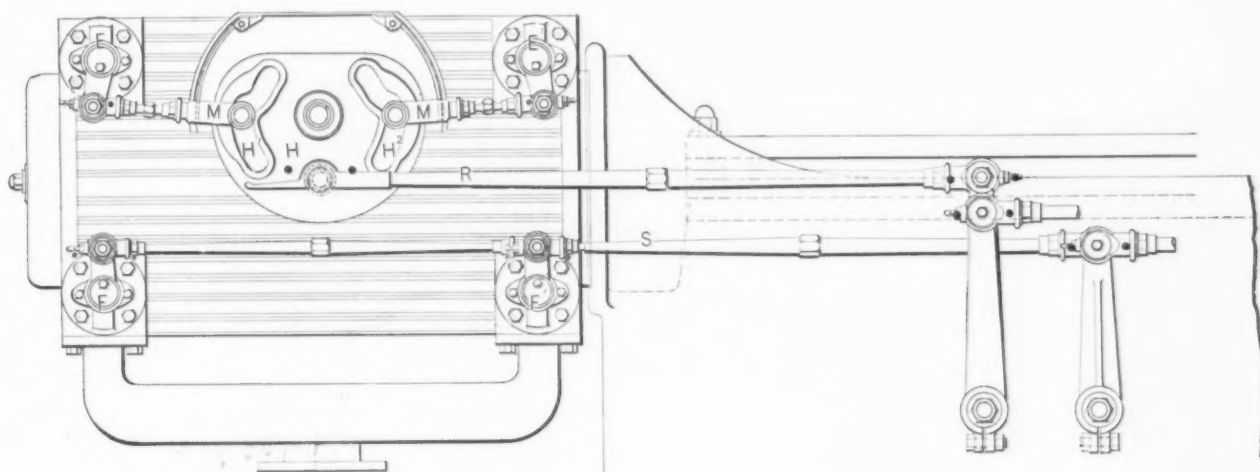


Fig. 1.—Side Elevation.

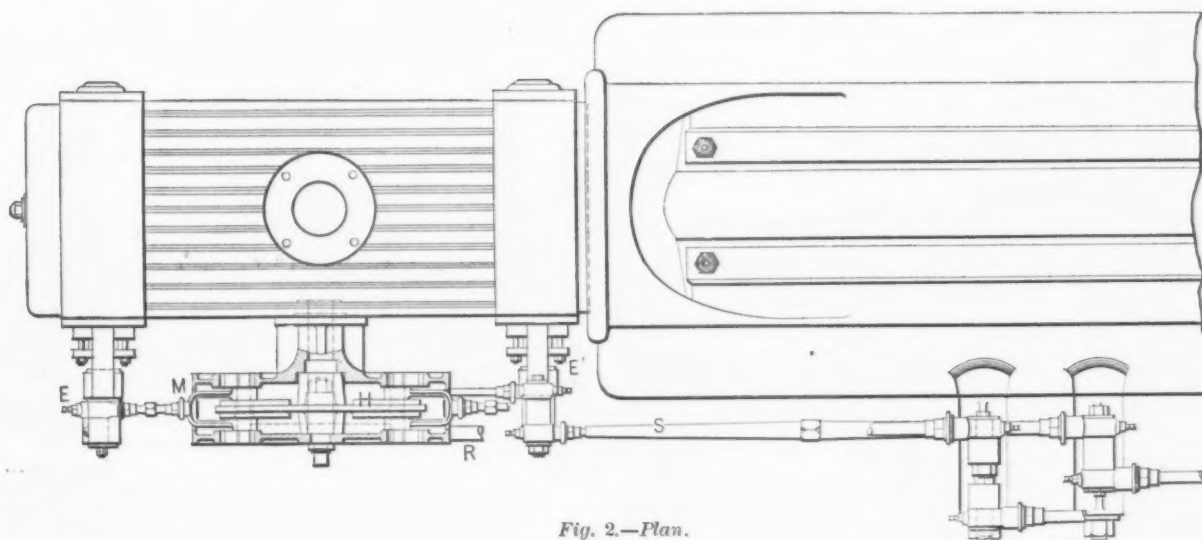


Fig. 2.—Plan.

THE VON MENGERLINGHAUSEN STEAM ENGINE.

of the valve, as is usual, and under all conditions the parts are opened to their full capacity.

On the crank shaft is a shifting eccentric for the induction valves and a fixed eccentric for the exhaust valves. Pivoted on a projection of the cylinder is the wrist plate H. The induction valves E E' are of gridiron form. The wrist plate is formed with two symmetrical irregular grooves, H¹ H², each of which has two circular portions of different radius, yet concentric with the axis of oscillation, and two curved surfaces eccentric to the axis and connecting the concentric portions. Working in the grooves H¹ H² are rollers held in the forked ends of the valve rods M M, whose other ends are connected to the cranks of the induction valves E E'. On the plate H is a wrist pin to which one end of the rod R, leading to the shifting eccentric, is attached. The exhaust valves

and close very quickly and cut off at the desired point. It is claimed that this oscillating wrist plate is of special value when applied in connection with induction valves which require but little movement, as the valve movement may be limited to the exact requirements irrespective of the further traverse of the wrist plate after the required movement has been made. The advantage in thus limiting the valve movement is that with valves having two or more ports the width of the spaces or bridges between the ports in the cylinder and valve need not exceed the width of the ports, except to a sufficient degree to give the lap required for tight closure, whereas if the opening or closing movement of the valve continues throughout the entire period of movement of the eccentric connections the surplus movement at late points of cut-off will be such as to necessitate the widening of the spaces

tons displacement. The longest warship next to the "Rurik" is the "Sardenga," of the Italian navy, which is 410 feet. The "Rurik's" estimated speed is 18 knots, and it is claimed that she can steam a distance of 19,000 miles without recoaling.

Radical changes in our immigration laws are earnestly advocated by Charles Emory Smith, ex-United States Minister to Russia, and Senator Chandler, chairman of the Senate Committee on Immigration. Mr. Smith, while condemning indiscriminate opposition to the immigration movement, points out that the changed condition of the country no longer calls for foreign labor with the urgency of former years; that, indeed, the labor market is now overcrowded. More than this, the character of immigration has deteriorated; that it no longer consists of kindred races

easily assimilated, Slavic immigration having become excessive. Unlike the earlier immigration, the latter must remain an alien and disturbing element. Mr. Smith favors a heavy head tax, which "will be most effective in assuring a judicious discrimination."

Merchant & Co.'s Tin-Plate Works.

Among the manufacturers of tin plates who have gone thoroughly into the business of this comparatively new native industry the house of Merchant & Co. of Philadelphia ranks high. Long and favorably known to the trade as importers of tin plate, they were among the first to recognize the possibility and desirability of making this branch of trade a stepping stone to the establishment of a home industry which should eventually take solid root in this country and be able to compete successfully with foreign establishments. To that end Merchant & Co. commenced the manufacture of American tin plates on a limited scale in Philadelphia last year. Twelve months ago, having acquired property in a favorable situation at Twentieth street and Washington avenue, adjoining the line of the Philadelphia, Wilmington & Baltimore Railroad, they commenced the erection of tin-plate works on a large scale, which were completed and ready for operation in June last. Since that date Merchant & Co.'s factory has been most active, the output increasing monthly, until at the present time they have eight pots in constant use. The works are running night and day straight along; all grades of both bright tin and roofing plates are being put out in large quantities, and of a quality which is claimed to be quite equal, and in some cases superior, to any similar foreign brands. The market for the home product is stated to be most satisfactory, and the firm's material finds a ready sale in all parts of the United States.

Merchant & Co.'s works at 2013 to 2029 Washington avenue are very complete and well appointed, the situation being particularly well chosen as regards shipping facilities, two side tracks communicating with the railroad line before mentioned running through the yard and works. The establishment comprises a series of buildings containing the smelting department, two tin houses, pickling room, sorting and packing rooms, besides store rooms, offices, &c., and a spacious yard, with space for further buildings as such may be rendered necessary. The most recent addition is a building containing four tinning pots with an annex, in which a pickling and dipping machine of large capacity is now being installed, an improvement which is calculated to facilitate the work in that department very greatly. Eight Griffin's sets are now in active use, two, with flux process, turning outterne plates, and two, flux process, operating on bright tin. The four pots in the new tin house above referred to are all occupied on guaranteed brands of terne, which are coated by the pure palm-oil process. These four sets contain one train of rolls with a finishing pot. The bright-tin sets consist of two pairs of rolls with a dipping pot in the center, the remaining two terne-plate pots having similar fittings without the center dipping pot. The four last named are flux-process pots and are placed in a separate part of the works. Each set is provided with a double shift of hands, dippers, finishers and girls for cleaning the plates. About 100 hands are at present employed, and this number will shortly be increased to 130, owing to the rapidly growing business. Merchant & Co. are proud of their productions in both bright and terne-plates, of which a great variety is made. In bright tin plate all

grades, sizes and thicknesses can be and have been made of a quality which need fear no comparison with any imported material; and the same may be said of the firm's "guaranteed" roofing plates, which are the object of scrupulous care, none, we are told, being sent out which are not entirely up to the standard claimed for them.

The smelting department is an important feature of the establishment, a large output of solder, Babbitt, stereotype, electrotypes, and other metals coming from it. A smelting pot for refining old metals, having a capacity of 18,000 pounds, is situated in the center of the shop, while

The Griffin Roller Mill.

We illustrate in this issue the Griffin roller mill for reducing ores of all kinds, phosphate rock, cements, carbon, &c. In its construction is employed the principle of a roll running within and against a ring or die.

Heretofore in all mills employing this principle the roll has been propelled by being pushed around by drivers, or carried on journals within the roll. The friction and destruction of the pushing devices and journals has been very great and

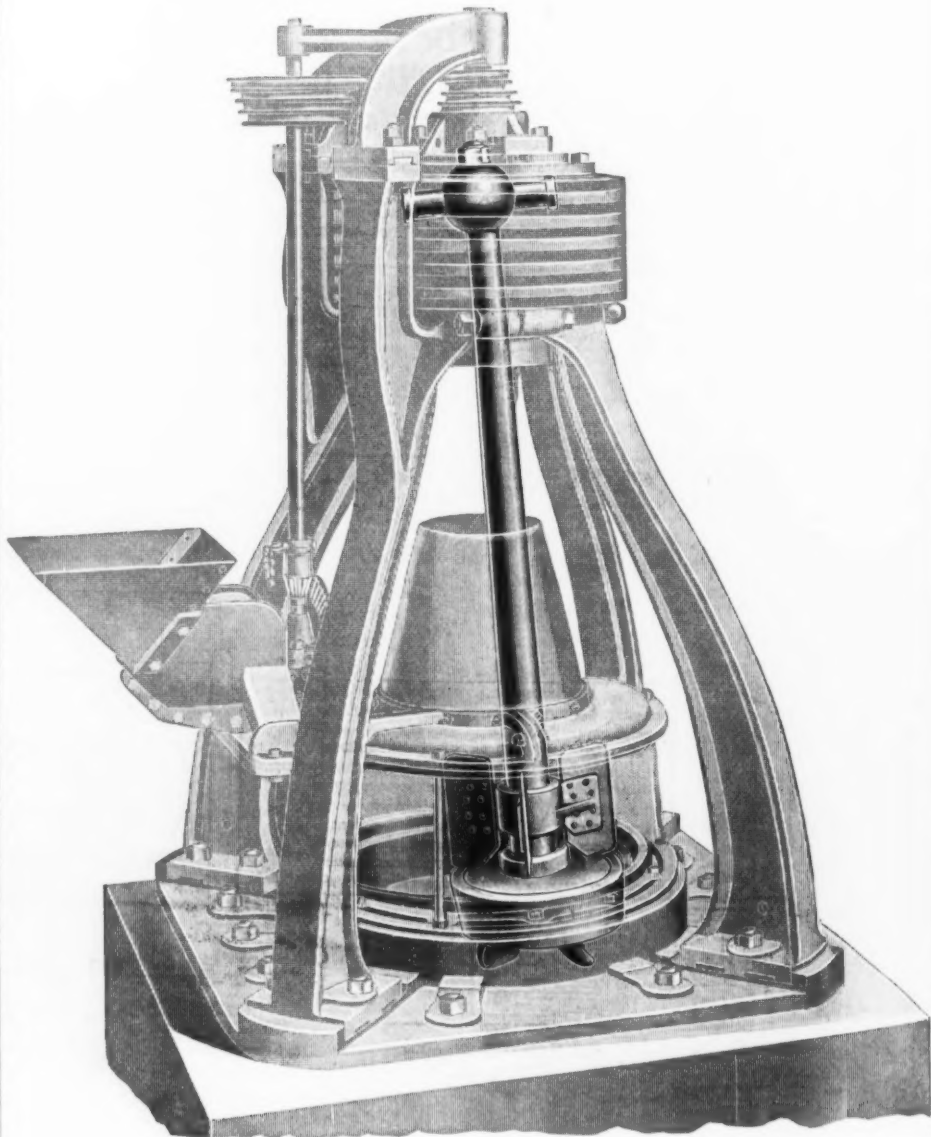


Fig. 1.

THE GRIFFIN ROLLER MILL FOR DRY GRINDING.

six pots for solder and six for type metals are placed on either side.

That Russia should constantly endeavor to borrow more gold, when she already has enormous amounts to her credit in European banks, causes much inquiry. A Berlin letter says: "The view has taken deep root that Russia's only object in negotiating for a commercial treaty is to fill her treasury, and that she cares little or nothing for a revision of her tariff. It is often openly said that Russia's only object in starting the project of a commercial treaty is to reopen the German market to her loans." It is well known that the year of famine has been a great strain on the resources of the Empire.

has involved loss of power and excessive wear and tear.

In order to overcome this difficulty, J. K. Griffin conceived the idea of positively revolving the roll on its own axis and then letting it do its own traveling. In this mill centrifugal force holds the roll in contact with the ring or die against which it runs. This device is claimed to embody a new mechanical movement, which has not been employed heretofore in any kind of a machine.

The roll is fixed rigidly on a solid shaft suspended from a pulley above by means of a universal joint. The trunnions on the ball at the top of the shaft and within the pulley cause the shaft to rotate with the pulley, but the joint gives the shaft and roll freedom to swing

in any direction. When in operation the roll, pressing against the ring or die, travels around within it, causing the shaft to take a peculiar gyratory motion. This makes a very substantial construction, which is capable of being run at quite a high speed, if necessary. The nearest journal to the grinding roll is under the pulley, 5 feet from where the work is being done. It is therefore free from the destructive jar which destroys all journals in the rolls. The roll is fastened rigidly to the shaft by a device which tightens as it is worked and which consequently cannot come loose. This mill has

on the shaft above the roll, which also bring in air at the top of the conical housing, forcing it out through the screens. After going through the screens the pulverized material passes through an opening into a receptacle underneath, from whence it can be conveyed wherever desired. When running at its proper speed the roll presses against the die with a force of about 6000 pounds, which is what does the work so effectually.

In the wet grinding mill the fans are omitted. Water is introduced with the feed and the pulp is carried out through the screens into the surrounding trough,

habiting the old rookeries, but the new buildings will accommodate 2000 people, and the work has been carried on in six sections in order that no more of the old tenants might be turned from their homes than was absolutely necessary. So desirable are the new houses that 576 applications had to be rejected. The houses are all rented, and the net return on the investment is 5 per cent., a figure which may seem small to our speculative builder, but which there is considered ample as a return for so secure an investment.

Grand Rapids Refrigerator Company.

The Grand Rapids Refrigerator Company, Grand Rapids, Mich., have completed an important addition to their factory. The new building, which joins the old one, is 126 feet deep and 66 feet wide, 7 stories high, besides a basement. It is a handsome structure, attention having been given to architectural effects in designing the front, which is composed of Amherst blue stone, with pressed red brick trimmings and iron columns, pierced with arched windows on the sides and in the top story, while the entrance for teams has an ornamental grill. The building is provided with automatic sprinklers for fire protection, and the floors are lined with asbestos. On the first floor are the offices of the company, the shipping room and a few cut-off saws near the dry kilns in the rear. The offices are provided with every convenience for the rapid dispatch of business, including speaking tubes to every department, and are furnished in a first-class manner throughout. The entire building being heated by steam, fresh air is supplied the offices by the direct-indirect system of steam heating, with a fire place added for ventilation. The offices and sample room are lighted by electricity and the rest of the factory by gas. A two-story fire-proof vault supplies, on the first floor, protection for books and papers, and in the basement protection for the company's patterns in metal work. The second floor of the building is used as a sample room. The third floor is an extension of the cabinet and metal room, cut through from the old building. The fourth floor is an extension of the finishing room. The fifth and sixth floors are at present used for storage. The seventh floor contains the bronze foundry and polishing works for the manufacture of refrigerator trimmings. Several new machines have been added to the already very extensive plant, in order to increase the capacity of the works, which is now 150 finished Leonard Cleanable refrigerators daily. The company claim, with these improvements and additions, the largest and best refrigerator factory in the United States.

One of the most important projects of the United States engineers is the excavation of a ship channel 20 and 21 feet deep in the shallows of the connecting waters of the great lakes between Chicago, Duluth and Buffalo. The work is divided into eight sections, and must be begun by May 15, 1893, and finished within three working seasons, that is, a period of 200 working days between May 15 and November 30. The contracts will be awarded by sections. There is available for commencing the work the sum of \$375,000, while Congress has limited the cost of the channel to \$3,340,000. The first section comprises the improvement of two shoals in St. Mary's River, Mich., above the canal.

A bulletin from the Census Office at Washington, giving statistics of the railway mileage of the world, claims that 44.18 per cent. of the whole is in the United States.

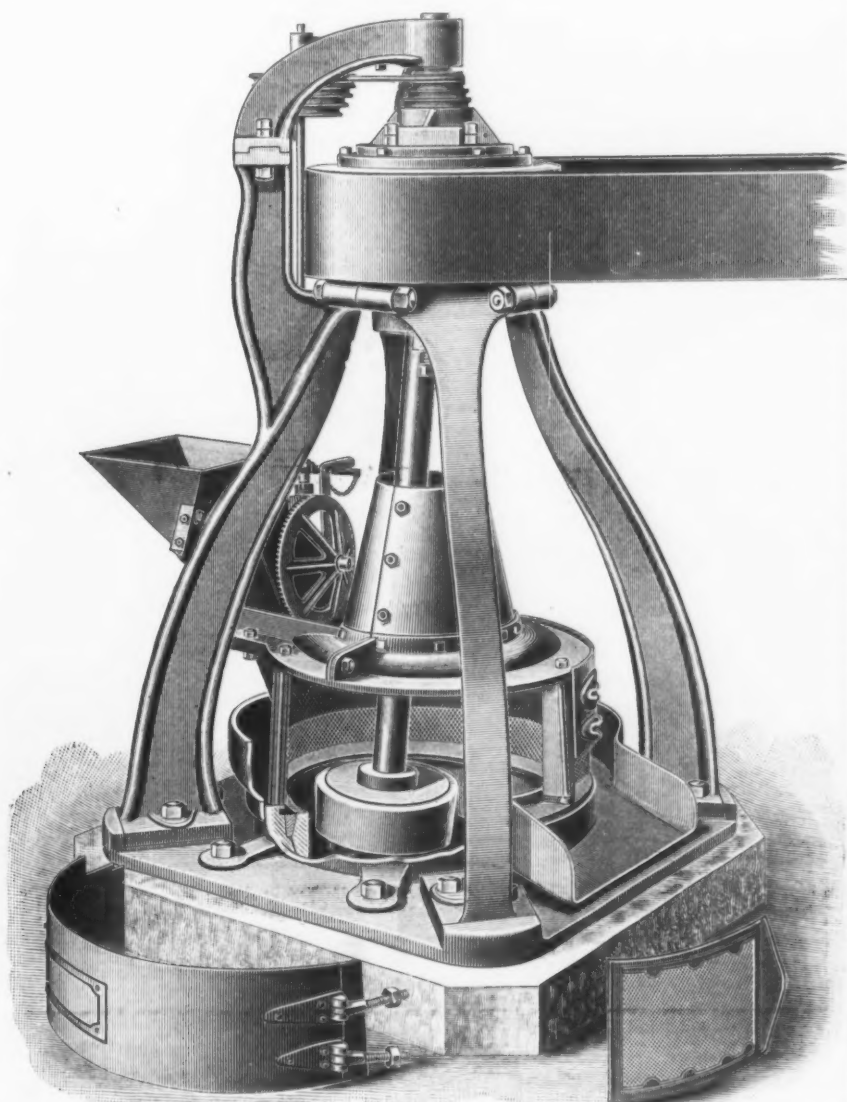


Fig. 2.

THE GRIFFIN ROLLER MILL FOR WET GRINDING.

been developed and perfected by use during a period of four years.

A reference to the cuts will show the construction clearly. Fig. 1 is a perspective view of the mill for dry grinding, the roll, shaft and universal joint being in full lines, and the other parts in light lines. Fig. 2 shows the mill for wet grinding. The operation of the mill is as follows: The material to be ground is put into the automatic feeder, which delivers it into the grinding chamber. In this chamber is the rapidly revolving roll with plows attached to its bottom, which take up the material and distribute it against the ring or die, where it is crushed. As the whole mass of material is whirling around the fine portion rises to the top and passes out through the screens, assisted by the fans

which delivers it to amalgamating plates or to a concentrator. A large number of them are in operation in different parts of the country and in Mexico. The machine is manufactured by the Bradley Fertilizer Company, 92 State street, Boston.

The Improved Industrial Dwellings Company of London have just completed nine blocks of dwellings commenced six years ago for the working classes. The land previous to 1886 was covered by old and dilapidated buildings, and the Industrial Company was formed for the purpose of removing these and replacing them by a superior class of dwellings, suitable for workmen and their families. There were between 1300 and 1400 persons in-

The Reliance Elevator Register.

This register is intended for use on hydraulic elevators to determine the amount of water consumed, and is designed to take the place of a water meter. It is also applicable to other kinds of elevators to show the amount of their travel or duty performed. Fig. 1 shows the vertical frame register ready for attachment. Fig. 2 shows the driving pinion with the two pawls and long, flat, tempered steel springs. The driving action is made doubly sure by the use of the two pawls. There are two other pawls and springs, not shown in the cut, which prevent the ratchet from turning backward. The indicator is attached to the ratchet pinion by a slotted end which insures positive action at this point, and is capable of registering 10,000,000 or 100,000,000 cubic feet.

The manner of attachment to the elevator varies with the different conditions.

Colorado Steel-Rail Production.

The recent consolidation of the Colorado Fuel and the Colorado Coal & Iron interests into the Colorado Fuel & Iron Company, which was fully set forth in *The Iron Age* at the time, marked an epoch in the steel-rail production of the far West, and opens one that makes promise of becoming a controlling factor in the Western trade.

During a series of years the operations of the iron and steel plant of the Colorado Coal & Iron Company were more of the nature of experiments. The iron ore is high in sulphur, the coal, while being of a fair coking variety, was hard to properly treat without ovens especially constructed. The markets were undeveloped, and orders so irregular in volume as to render the retention of skilled labor expensive and uncertain.

The company produce their own ores and coke and possess a market almost exclu-

is 150,000 tons per year, the working capacity 120,000 tons. Even with this latter production the furnace capacity would be about absorbed to the neglect of the other departments, consequently he does not consider it advisable to clog the rail mill on the start.

When sounded on the question of prices President Osgood talked very frankly. He said that the steel rail combination had not approached his company on the subject of a pooling of interests, and probably would not because of their comparatively small output. He believed that they would be ignored for the present. The policy of the company is, and will be, to secure the maximum revenues from the business. While the railroads always drive a sharp bargain, he was confident that the freight differential would so count in the company's favor that they could secure business at a fair price. He, of course, preferred not to state what this would be, but the inferences drawn were that it is not far from \$30, f.o.b. at mill, to roads having

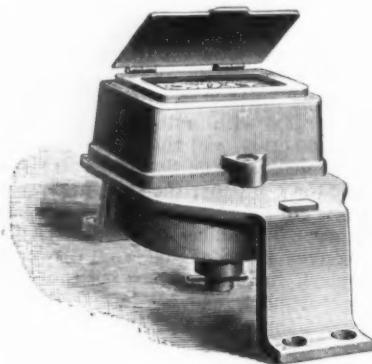


Fig. 1.—Vertical Frame Register.

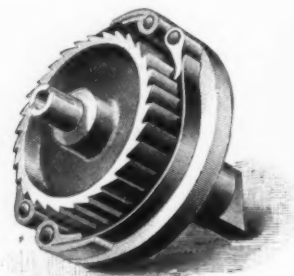


Fig. 2.—Driving Pinion.

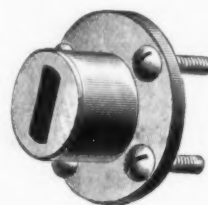


Fig. 3.—Socket Plate.

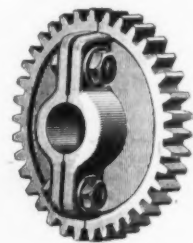


Fig. 4.—Clamp Gear.

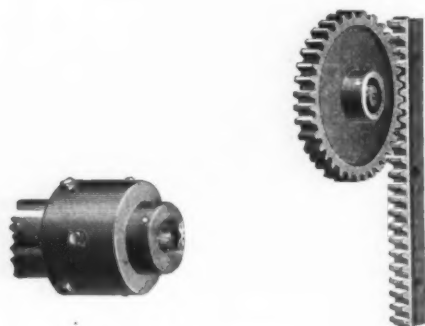


Fig. 5.—Hub.



Fig. 6.—Rack and Gear.

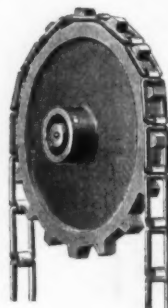


Fig. 7.—Sprocket Wheel and Chain.



Fig. 8.—Sheave.



Fig. 9.—Sheave in Well.

THE RELIANCE ELEVATOR REGISTER.

If a counter weight shaft is available at the top of the elevator well the end of the shaft is slotted transversely, so that the tenon end of the register pinion, Fig. 2, will fit as a screw driver would a screw head. If it cannot be readily slotted a malleable iron socket plate, Fig. 3, may be screwed to the end of shaft, or if not accessible a clamp gear, Fig. 4, may be used. Fig. 5 represents a hub by which the end of the shaft may be clamped to the end of the register's driving pinion. Fig. 6 shows the rack and gear attachment used where there is not a counter-weight shaft, the rack being screwed to the run at the side of the elevator well and the gear attached to the end of the register pinion. The link belt and sprocket wheel, Fig. 7, also the cord and sheave attachment, Fig. 8, doubtless explain themselves in connection with Fig. 9, which shows the sheave wheel at the opposite end of the well. This device is made by H. A. Desper of Worcester, Mass.

sively their own. The open differential in freight between Denver and Chicago is in favor of the former city by about \$5. This is a powerful factor in determining the control of the steel business. Roads reaching Chicago are, of course, not confronted with this \$5 differential, but with the actual cost to them of a haul per ton on 1000 miles. This is considerably less, but still of sufficient importance to count in favor of the Western company as against those of the East.

President Osgood of the Colorado Fuel & Iron Company informs a representative of *The Iron Age* that a number of roads have entered into negotiations of steel rails for next spring's delivery. They have named a price at which they are willing to take a comparatively large tonnage. The company has also given terms. The two are sufficiently close together, he believes, to warrant the statement that large contracts will be closed before the end of the year. Eighty thousand tons was the figure named. The full capacity of the mill

Eastern connections. From roads outside of the territory of the steel-rail combination it is probably that a higher price will be obtained. During the past month contracts were made with roads west of Denver at \$34 and \$35 per ton. It is because of this Western demand at higher prices that the company prefer not to contract their full capacity to roads running East, and it is probable that they will not seek business after a certain limit—say 80,000 to 90,000 tons—has been reached. Our informant was inclined to the belief that the railroads would do very little rail replacing next year, owing to the causes which have been operative during the past three years as well as the large traffic expected.

President Osgood states that the steel-rail plant can now turn out a ton of rails as cheaply as its Eastern competitors. The plant is comparatively small, and in a rush of business would be hampered by a lack of pig iron. Mills in other sections of the country can buy pig iron in the open

market. This the company find it impossible to do, owing to the fact that they are exclusive producers.

MANUFACTURING.

Iron and Steel.

We are advised that the New Castle Steel & Tin Plate Company, Incorporated, at New Castle, Pa., intend to complete their plant as soon as possible for the purpose of engaging in the manufacture of tin and terne plates. This concern will have one of the largest and most complete tin-plate plants in the country, their buildings being fireproof and built of iron and brick. They will roll down in their bar mill Bessemer steel billets made by the Shenango Valley Steel Company, whose plant is located only 600 feet distant. The pig iron used by the Shenango Valley Steel Company is made from Lake Superior ore, at blast furnaces alongside of their plant, and the tin-plate concern will be able to demonstrate to any one that their sheets will be strictly American product. The main structural work in one of the main buildings was blown down by a storm a few days ago, which will delay the concern some time in starting up. Their buildings are being erected under contract by the Morse Bridge Company of Youngstown, Ohio, on whom the loss, amounting to about \$10,000, will fall. The officers of the New Castle Steel & Tin Plate Company, Incorporated, are: George Greer, president; William S. Foltz, treasurer, and Charles Greer, secretary. The Board of Directors consists of the following: George Greer, William S. Foltz, John Stevenson, Jr., J. P. H. Cunningham and S. W. Cunningham.

P. L. Kimberly & Co. of Sharon, Pa., manufacturers of iron and nails, are erecting at their Greenville plant four upright Russer boilers, which are being built on their heating furnaces in that plant.

The Ellwood Steel Company at Ellwood, Pa., who are erecting a plant for the manufacture of sheet steel exclusively, have been delayed somewhat by the contractors, but expect to be in the market with their product before the first of the year.

The personal property of the Greensburg Rolling Mill Company at Greensburg, Pa., formerly operated by the Greensburg Steel Company, is announced to be sold at sheriff's sale on December 2, at the suit of the Kelly & Jones Company of Greensburg, Pa.

The new concern that has supplanted the McHose Iron Company at Norristown, Pa., have applied for a charter under the title of the Norristown Iron Company, with the following officers: James Pollock, president; Paul Thompson, secretary and treasurer; Charles Shoen, James Pollock, E. R. Mann and Frank Samuel, directors. It is the intention of the company to start up the Norristown Furnace at an early date, the product being low phosphorus Bessemer iron.

Furnaces B and G of the Carnegie Steel Company, Limited, at Bessemer, Pa., have been put out of blast for repairs. Furnace B will be relined and partially rebuilt. This furnace has been in blast only about one year, but as it runs on spiegel the lining has become worn to such an extent that it has been decided to reline and otherwise repair it. Furnace G will be completely rebuilt and practically made a new stack. It was built about seven years ago, and in that time has been relined twice. Ten feet will be added to the height as the stack, making it the same height as its companion stack known as furnace F. The blowing out of these two stacks leaves six furnaces in operation on Bessemer iron and one on spiegel.

The Minnesota Blast Furnace Company, a new corporation in which Charles Himrod & Co. and Crerar, Clinch & Co. of Chicago are interested, have leased the Duluth Furnace, and propose to put it in operation about the middle of December. A new hearth and bosh are now being put in and another engine will be added to the equipment. The output of the furnace is expected to show a handsome increase on the former blast. Bessemer pig iron will be the exclusive product, the bulk of which will be shipped to the West Superior Iron & Steel Company. The works of the latter company are now turning out about 125 tons daily of steel in various forms.

The puddling departments and axle hammer of the Albany Iron Works, Troy, N. Y., were the only departments in operation last week.

The annual meeting of the stockholders of the American Tin Plate Company was held at Elwood, Ind. President A. L. Conger of Akron, Ohio, made the annual report, after which the following Board of Directors was elected:

Col. A. L. Conger of Akron, Ohio; John F. Hazen, Cincinnati, Ohio; W. B. Leeds, Richmond, Ind.; W. P. Hutton, Richmond, Ind.; J. M. Overshiner, Elwood, Ind., and F. G. Darling, Indianapolis, Ind. The board organized, electing the following officers: President, A. L. Conger; vice-president, John F. Hazen; manager and treasurer, W. B. Leeds; secretary, C. S. Tarlton. The company soon will enlarge the factory to a six mill plant, and will also increase the capacity of the tinning department. The works are now shut down, undergoing extensive repairs, but will start up again in about two weeks with a full force of hands in every department.

The plant of the Sweet's Mfg. Company, at Syracuse, N. Y., is to be enlarged and improved at an estimated outlay of over \$100,000. Additional property has been purchased, on which a new rolling mill will be erected, adjoining the old rolling mill, which now has a frontage of 220 feet and is 150 feet deep. The contract for the masonry work and roof has been let to a local contractor, and the Berlin Iron Bridge Company of East Berlin, Conn., will furnish the iron work. The former is to be completed by April 1 and the latter by June 1. It is expected to have the mill ready for work by August. The cost of the building will be \$40,000, and the capacity will be more than treble that of the old mill. It will be equipped with three new trains of rolls. The new boiler equipment will consist of six steel boilers aggregating 1000 horse-power, and there will be four additional engines, two of them of the Corliss type, 18 x 30, making 150 revolutions per minute. The other two will be Straight Line engines, 14 x 20 and 10 x 15 respectively, each making 300 revolutions. All these engines will be built by the Sweet's Mfg. Company. The cost of the boilers, engines and machinery is placed at \$40,000. Another building, to cost \$20,000, has been contracted for, but will probably not be built until the other structure is completed. It will be used for the storage of stock and for certain lines of manufacture not specified. These buildings when completed will consolidate the entire plant, the dimensions of which will then be as follows, as described in a local newspaper: Along Jefferson street from West street to the creek, 317 feet; along the creek 427 feet; along Tully street 100 feet; then north 120 feet, then west 177 feet to West street, and along West street to Jefferson street. In the old mill 50 men are employed, and the new one will give employment for 100 more. What is known as the West Side Mill of the company is running night and day, 350 men being employed there. The East Side mill has been idle for three months, but will soon be started up on orders which are being booked, and 50 men more will be at work. In the rolling mill department of the West Side Mill four trains of rolls are running, besides the wagon spring department. The additions to be put up will increase the number of employees to 500.

Fires were lighted in the Philadelphia Furnace at Florence, Ala., Nov. 19. This furnace is the property of the Florence Cotton & Iron Company, controlled by Philadelphia capital.

Work is being actively pushed on the coke furnace now nearing completion at Covington, Va., so that it can go into blast January 1. Frank Lyman of Brooklyn, N. Y., is the owner of the furnace.

The Gadsden, Ala., furnace went into blast again November 25.

The Tennessee Coal, Iron & Railway Company have opened large offices at Birmingham, Ala., for their sales agent. Work of improvement has been commenced at the Pratt mines. The new board of managers held a meeting recently, but no announcement has been made of what was done. They have carefully inspected all the company's properties, but it is said no radical changes or large projects will be set on foot until after the annual meeting in April next.

Of the furnaces in the Birmingham district the following are out of blast at present: Vanderbilt, Williamson, Alice No. 1, one of the Ensley City plant, and Mary Pratt. All of the other 20 furnaces are in operation, running to their full capacity. The Williamson and Vanderbilt furnaces have been undergoing some repairs. It is probable that some repair work will also be done on Alice No. 1. One of the Woodward plant has only recently been repaired and both furnaces of that great plant are now at work. The Oxmoor furnaces were thoroughly overhauled some time ago and are now running on full time. Both of the Sloss Iron and Steel Company's plants are in operation. It is probable that the furnaces now idle will all blow in a few weeks on account of the improvement in the iron market.

The Spathic Iron Company, recently organized at Nashville, Tenn., have leased the North Alabama Furnace at Florence, Ala., and will make necessary repairs and put it in operation the first of the year.

The Tudor Iron Works Company of St. Louis, Mo., are erecting an additional rolling mill 120 x 60 feet.

The Hay Steel Company, capitalized at \$37,000, has filed articles of incorporation at Burlington, Iowa. The company will manufacture iron, steel and other metallic products by what is known as the "Hay process," under patents granted to A. T. Hay.

Rising Fawn Furnace, Rising Fawn, Ga., operated by the Georgia Mining, Manufacturing & Investment Company, is now undergoing repairs. It will be two months before the furnace is ready to begin operations.

The Minneapolis Rolling Mills have filed articles of incorporation at Minneapolis, Minn., the capital stock being \$500,000. The site for the works comprises 10 acres, already graded, and well located as regards railroad facilities. The main building will be 360 x 160 feet, two stories high and built entirely of iron. It is expected to have the entire plant completed and ready for operation by May 15 next.

The New Haven Wire Mfg. Company of New Haven, Conn., have been obliged by the rapid increase of trade to increase their plant, and among other improved machinery added is the Ridgway steam-hydraulic crane for the rapid handling of the wire in course of manufacture. This quick-acting crane is now widely used in handling wire in course of annealing and pickling.

The Columbia Rolling Mill Company of Columbia, Pa., have recently placed an order with Ridgway & Son for one of their steam-hydraulic cranes for the Vesta Furnace operated by this company. It will be used for the loading of furnace cinder. One of these cranes put in at the No. 2 furnace of the Pennsylvania Steel Company at Steelton a year ago did away with the labor of two men and made a saving of \$1095 for the year besides doing the work up quicker and better than ever before. The job on the cinder bank which before was hard to keep a good man at is now a jobsought after. A large number of Ridgway cranes are now being used for this duty.

A fire in the works of the Michigan Forge & Iron Company, at Detroit, on Friday caused a loss of \$75,000.

Machinery.

The Gill Mfg. & Gas Fitting Company, capital \$10,000, has been incorporated at Houston, Texas, by R. C. Tips and associates to make gas heaters, sewer traps, &c.

A foundry and machine shop will be established at Camden, Ark., by W. H. Adams and associates.

The St. Louis & Southwestern Railroad will erect large car shops at Pine Bluff, Ark.

Isaac McKinney and L. T. Applegate have incorporated the Covington Mfg. Company at Covington, Ky. Capital \$200,000.

It is stated that the Roan Iron Company, Rockwood, Tenn., have authorized the issue of \$350,000 bonds with a view to the erection of new furnaces and coke ovens.

The machinery for the South Boston Iron Works, Middlesborough, Ky., will soon arrive and be placed in their new plant, which has been completed.

The Weisel & Vitter Iron & Ice Machine Mfg. Company, whose plant was destroyed in the recent Milwaukee fire, will rebuild on a larger scale. The capital stock has been increased to \$300,000, and about \$75,000 will be expended in erecting the new buildings.

The pattern shop of the Spiral Weld Tube Company, near East Orange, N. J., has been burned. The loss is about \$5000, insured. The fire is supposed to have been the work of a discharged watchman, who is now under arrest.

In the courts at Pittsburgh last week a number of judgments were entered against the King Rock Drill Company of that city. Among them was one for \$1269.27, entered by the U. Baird Machinery Company of Pittsburgh.

In the United States Circuit Court at Pittsburgh, last week, the case of the Columbus Machine Company against the Carroll-Porter Boiler and Tank Company of Pittsburgh came up for trial. It is a case of disputed account over some machinery on which the plaintiffs claim \$3800 for rolls and for machinery for driving them for rolling heavy plates. The defendants claim that the machinery, although guaranteed to do certain work, proved defective, broke down, and that they were at an expense of over \$2000 in repairing and replacing the broken and defective parts.

The Dunkirk Engineering Company have been incorporated at Albany, N. Y., with a capital of \$51,000. The object of the concern is the making and repairing of boilers, engines, general machinery and implements.

The Enterprise foundry and machine shops, at Danville, Pa., are to be put in operation

by the Mahoning Rolling Mill Company, who recently purchased the property. The plant is well equipped for the manufacture of heavy machinery and castings.

We learn that work on the new machine shop which is being added to the plant of the George V. Cresson Company, Philadelphia, is progressing rapidly. The building is now roofed and the necessary fixtures and machinery will be placed as speedily as possible. The company's shops are busily employed on orders for power-transmitting machinery. A Ridgway crane of 5 tons capacity has just been installed in their new foundry.

The Link Belt Engineering Company of Nicetown, Philadelphia, report exceedingly good business. Among large contracts now in hand are machinery for handling soda ash for the Solvay Process Company of Syracuse, N. Y., a rope drive for the new Hotel Netherlands, New York City, and machinery for the Dodge Coal Storage Company's plant in connection with the extensions of the Pennsylvania Railroad Company's establishment at South Amboy, N. J. The Link Belt Company have also recently completed a large coal handling and storage plant for the Maryland Steel Company, Sparrow's Point, Md.

The capital stock of the Holly Mfg. Company of Albion, N. Y., has been increased from \$500,000 to \$1,000,000.

The plant of the Goshen Pulley Company, Goshen, Ind., has been sold at receiver's sale to Mrs. C. C. Carmein for \$2500.

The works of the Michigan Forge & Iron Company at Detroit, Mich., have been destroyed by fire at a loss of \$75,000.

John F. Stevens is enlarging his boiler works at Indianapolis, Ind., his business having outgrown the present plant.

The largest foundry in the State of Indiana, which is now nearly under roof, of which mention was made last week in these notes, is to be entirely equipped with the Ridgway steam-hydraulic cranes. No overhead travelers will be used at all, but the whole floor space will be covered by the Ridgway quick-acting swing cranes. These cranes require no special operator, but every man in the shop works them as he has need of a lift. This company adopted the Ridgway crane after seeing it in use in the new foundry of Fraser & Chalmers of Chicago.

There is a project on foot to establish at Utica, N. Y., a factory for making street sweeping machines. Members of the Utica Highlands syndicate have the matter in hand. The factory, if established, will employ from 400 to 500 hands.

The Rodwell Mfg. Company of Buffalo have decided to move the plant to Niagara Falls, N. Y. The matter of selecting a site is now under consideration by a committee chosen for that purpose.

The Stanley Electric Mfg. Company of Pittsfield, Mass., have recently received a large size balancing way from the manufacturer, N. P. Bowsher, South Bend, Ind.

The Champion Blower & Forge Company, of Lancaster, Pa., are again enlarging their works. The addition made a year ago was thought at the time to be ample, but the increase of business has been so rapid that additional facilities became imperative, hence the present enlargement, which will be equivalent to about one-third of their present capacity. Ground has already been broken, and the company expect to be in first class shape for the spring trade. Some large shipments have been made within the past few days to the Pacific Coast, including blowers, forges, drills and other specialties for which this company have gained an international reputation.

Miscellaneous.

The MacKellar Foundry Facing & Supply Company of Quincy, Ill., publish letters showing that the statement is untrue that the sea coal manufactured by them is ground from Western coal. The Quincy Towing & Coal Company state that they furnish the MacKellar Foundry and Supply Company with the highest grade of Youghiogheny coal.

Lake Angeline, near Ishpeming, Mich., has been drained of water by the Pittsburgh & Lake Angeline Iron Company, the Cleveland Cliffs Iron Company, and the Lake Superior Iron Company, adjoining property holders, who jointly undertook the work in order to obtain the supply of high-grade ore which is said to line the bottom of the lake.

B. F. Sturtevant Company have purchased the four-story building, 135 North Third street, Philadelphia, Pa., and are now refitting the store and putting in a complete stock of their machinery. They are fitting up the loft overhead with a sheet-iron department, where it is proposed to make the sheet-iron pipe used with their blowers and heating and ventilating apparatus in Philadelphia and vicinity. This branch has been placed in charge of C. H.

Gifford, who has been connected for 15 years with the concern at Boston.

In the courts of Pittsburgh last week Ernst Hirsch entered a suit against W. S. Zahniser and others, asking that a receiver be appointed to wind up the affairs of the United States Safety Fire Escape Company of Pittsburgh. The plaintiff claims that he entered into partnership with the concern with the understanding that he was to have charge of the Pittsburgh office at a salary of \$75 a month, \$60 of which was to be paid monthly and \$15 placed to his credit for one year, when it was to be paid to him in one sum. The claim is made that this agreement has been violated, and Mr. Hirsch seeks to have the partnership dissolved.

The car shops of the Lindell Railroad Company, at St. Louis, have been burned at a loss of \$80,000.

The Pennsylvania Railroad Company will test the system of lighting their tracks by electric light. Twenty miles of road will be equipped, and if the system proves a success the main line will be similarly equipped for the entire distance between Philadelphia and Jersey City.

South Baltimore Car Works, Baltimore, Md., are stated to be very busy completing contracts and on some heavy repair work. It is said that a large order for freight cars is pending; and prospects for future work are regarded as very promising. A new car shop 60 x 300 feet is now being erected in order to provide adequate facilities for the increased business which is anticipated.

Baltimore Copper Smelting & Rolling Company, Baltimore, Md., are just completing an addition to their electrolytic plant which will materially increase their output of copper.

The Berlin Iron Bridge Company of East Berlin, Conn., have taken the contract for a new machine shop to be built at Newport News, Va., for E. C. Hillyer & Co. The building will be 82 feet in width, divided into a central portion 40 feet between crane girder columns, with a wing on each side 21 feet in width. The wings will be two stories high, the balcony floor being used for light work. The central portion of the building will be controlled by a 2-ton traveling crane.

The St. Paul Plow & Wagon Works at Gladstone, Minneapolis, were burned on Tuesday morning. Loss, \$300,000; insurance, \$163,000.

The work of rebuilding the partly destroyed plant of the Waterbury Brass Company at Waterbury, Conn., is under way, and an effort will be made to get the wire mill in running order by January. The rolling mill will not be ready for operation before spring.

In the case of the National Harrow Company vs. James Hanby at Syracuse, N. Y., in the November term of the United States Circuit Court, a motion to go over the term was allowed. In this case the plaintiff alleges that the defendant has been selling harrows manufactured by the Clipper Chilled Plow Company, which are infringements on the patents held by the plaintiff. Charles H. Duell appeared for the plaintiff, and George B. Seldon of Rochester for the defendant. The defense agreed to withdraw all testimony, excepting the exhibits. In the case of Syracuse Chilled Plow Company of Syracuse, N. Y., vs. the Clipper Chilled Plow Company of Elmira, an action to recover for the infringement of patent on the "jointer" attachment, which has been in litigation for two years, involving a patent for a reversible jointer applied to a reversible hillside plow, the final hearing was held.

The marine department of the Maryland Steel Company, Sparrow's Point, Md., have now in hand five fine steel tugboats in various stages of completion. One just completed for Baker, Whitely & Co. of Baltimore, made a satisfactory builder's trial trip on the Chesapeake last week. The hull of a second for Ross & Sandford of Baltimore, is finished, and the engines and boilers will be immediately placed. Two others, for the Baltimore & Ohio Railroad Company and Maryland Steel Company respectively, are well on toward completion; while a fifth steamboat for the Merchants' & Miners' Transportation Company which will be a very powerful vessel, is nearly framed. Work is stated to be very active at the Maryland Steel Company's yard.

A charter has been granted in West Virginia to the Powhatan Brass & Iron Works. The capital is \$100,000, but power has been granted to increase it to \$500,000. The incorporators are Charles H. Simmons, V. A. Harder, W. H. Cummings, George Lane and Louis T. Merian, all New York and Brooklyn business men. The main offices of the company will be at Charlestown, W. Va.

It is stated that the St. Louis and Southwestern Railroad Company will erect extensive car shops at Pine Bluff, Ark.

The Brandford Hedge Company have been organized at Brandford, Ont., with a capital stock of \$70,000. The new company have recently purchased the business of the Ontario Hedge & Wire Fence Company of Niagara Falls, Ont.

The H. N. Strait Mfg. Company of Amourdale, Mo., will erect a new addition, 90 x 60 feet in size, to their present works. The cost of the building and equipment will be about \$60,000.

The nail mill at Georgetown, Pa., has been leased by Pittsburgh parties, and will be put in operation at once.

The business of the Boonsboro Mfg. Company at Gettysburg, Pa., has outgrown the capacity of the present plant, and the stockholders have decided to increase the capital stock from \$5000 to \$12,000.

The McMahon Belting Company have been incorporated to continue the business heretofore carried on by G. P. McMahon & Co., at St. Louis, Mo. The company are manufacturers of the Crown raw-hide lace leather, picker leather, belting, &c.

The Bignall Mfg. Company's buildings, recently burned, at Buffalo, N. Y., are being rebuilt in a more substantial manner. It is expected that work will be removed in all departments at an early date.

The Queen City Mfg. Company's plant, at Meridian, La., has been burned. The loss on building and machinery is \$38,000. The loss is covered by insurance, and the works will be rebuilt at once.

Among recently authorized corporations in Illinois are the following: The Chicago Nail & Wire Company, Chicago; capital stock, \$1,000,000; incorporators, Thompson McCosh, William E. Stockton and George C. Fry. The Illinois Equipment Company, Litchfield; capital stock, \$300,000; incorporators, Louis C. Haynes, Henry H. Beach and J. B. Amnden. The Chicago Clock Mfg. Association, Chicago; capital stock, \$100,000; incorporators, Cleveland D. Dunderdale, Jr., W. H. Rattenburg and H. M. Lewis. The Frazier Lock Company, Chicago; capital stock, \$100,000; incorporators, James L. Frazier, J. N. Yeomans and C. D. Covell. The World's Fair Souvenir Nail Company, Chicago; capital stock, \$20,000; incorporators, Frank Rigler, James A. Ridgway, Frank C. Huston and Charles E. Shearman. The Bradley Odorless Ash & Garbage Box Company, Chicago; capital stock, \$50,000; incorporators, Andrew F. Bradley, Julius Flonbach and M. L. Bradley. Western Steam Circulating Company, Chicago; capital stock, \$250,000; incorporators, John Davis, P. S. Hudson and S. N. Prentice. Excelsior Shaft Loop Company, Moline; capital stock, \$15,000; incorporators, Henry R. Schnarr, Harry T. Moss and Uriah Bortner. The Brewer Car Axle Box Company, Chicago; capital stock, \$5,000,000; incorporators, Russell Brewer, C. P. Burdick and A. G. Thompson. The Perforated Metallic Street-Crossing Company, Chicago; capital stock, \$100,000; incorporators, Frank M. Potter, Henry F. Hoepfner and William Wilhartz. Palmieri Safety Elevator Lock Company, Chicago; capital stock, \$20,000; incorporators, William Gibson, Edward J. Phillips and Curtis McPike. Monmouth Engine Company, Monmouth; incorporators, J. B. Moore, O. D. Wilcox, N. B. Woodward and others. The Duffy & Lovelock Tool Company, Chicago; capital stock, \$10,000; incorporators, James F. Duffy, Arthur Britain and Marian Duffy. Columbian Iron & Steel Company, Chicago; capital stock, \$5,000,000; incorporators, G. J. Hibbard, T. A. Hibbard and J. R. Hamilton. The Corlies-McKinney Engine & Boiler Company, Chicago; capital stock, \$100,000; incorporators, Walter S. McKinney, John Benham and Wesley Morrell. The Desplaines Electric Railway Company, Chicago; capital stock, \$2,000,000; incorporators, Willis T. Griffith, Sam A. Jacobs and F. E. Brady. Pennington & Fuller Electric Company, Chicago Heights; capital stock, \$1,500,000; incorporators, Joseph L. McKittrick, Joseph A. Fuller and Lutellus Smith. The F. E. Roberts Foundry Company, Chicago; capital stock, \$40,000; incorporators, F. E. Roberts, John Meyer and M. G. Smith. The Cargill Metal Company, Chicago; capital stock, \$30,000; incorporators, Theodore G. Case, Munson T. Case and Ulick J. Walsh. The Columbia Engine Company, Chicago; capital stock, \$100,000; incorporators, B. F. McKinley, Charles C. Spottswood and R. D. A. Wade. The Chicago Lead & Brass Company, Chicago; capital stock, \$100,000; incorporators, Louis Brandis, James A. Ingersoll and Joseph F. Koons; the Kennedy Electric Company, Chicago; capital stock, \$100,000; incorporators, Herman R. Powers, Snyder Evans and Frederick Arnd. The Zachlerlin Mfg.

Company, Chicago; capital stock, \$40,000; incorporators, Albert Zacherlin, Eugene Logothetti and Sigmund Zeisler. Harvey Mfg. Company, Harvey; capital stock, \$25,000; incorporators, Peter B. Lamb, Oscar W. Stone and Edwin B. Clark. Electric Power & Heating Company of Peoria; capital stock, \$500,000; incorporators, Joseph Elder, William Jack and Robert H. Walker. Stebbins Special Machinery Co., Chicago; capital stock, \$300,000; incorporators, Timothy Stebbins, Richard J. Jacker and Frank D. Thomason. The Western Mfg. Company, Galesburg; capital stock, \$40,000; incorporators, John N. Feight, A. P. Charles and Howard Duncan. The Albertson Railway Appliance Company, Chicago; capital stock, \$5,000,000; incorporators, A. C. Albertson, Lewis H. Owen and James Stillwell.

San Francisco News.

The election has interfered to some extent with business, but still its volume is not bad for the season; and now that the turmoil of politics is over, it is to be hoped that matters will return into their normal channels. The only thing to prevent this is the fear of conservative men as to how business may be interfered with by a new tariff act prepared by a Democratic House of Representatives under the inspiration of Carlisle, with a Democratic President, and, mayhap, a Democratic Senate. I think, however, that there will be a general acceptance of the inevitable, and that business will keep pretty well in its usual course.

I have forwarded you a telegraphic synopsis of the leading points regarding the "Olympia," launched from the Union Iron Works ship yard on the 5th ult. We take no small pride in the fact that she is the largest unarmored cruiser in the United States. She is a great credit to San Francisco shipbuilding. She has been on the ways somewhat over a year. Her length on the water line is 340 feet, her length over all is 344 feet, beam molded 52.10 feet, beam extreme 63 feet, mean draft 21.6 feet. She has two masts with two tops on each. Work was begun July 18, 1891.

Imports by sea for the past two weeks have not been very large, although if we take in the month a great deal of hardware, iron, wire, &c., has come to hand by sea. There have been no special changes in prices to note during the past two weeks. Pig tin and tin plate have been, unlike other articles in the line of metals, dull. Pig iron is still dull and low at former quotations, \$19 @ \$22.

The machine and pattern shop of the Atlas Iron Works at the Potrero was totally destroyed by fire on the 7th inst. The loss will reach \$70,000, a goodly portion of which was covered by insurance. For a while the shipyard of the Union Iron Works was menaced.

There continue to be fair imports of hardware, &c., by rail. For the past two weeks we have had 60 cars, of which there were iron, 10 cars; steel, 6 cars; hardware, 5 cars; stoves, 8 cars; machinery, 7 cars; wire, 3 cars; pipe, 5 cars; agricultural implements, 6 cars; plows, 1 car; wagons, 2 cars; forgings, 1 car; ranges, 1 car; wheels, 2 cars; plate, 1 car; grates, 1 car; safes, 1 car; 4678 pounds zinc and 791 pounds copper.

An engineering work that excites much interest has been undertaken by the contractors Cofrode & Saylor of Philadelphia in connection with a new bridge to be erected at a cost of \$500,000 for the New York Central & Hudson River Railroad at 135th street in this city. This firm have undertaken to move the big iron tower of the lift drawbridge from its present position about 150 feet west without interfering with the running of trains. Doubts are expressed respecting the feasibility of the plan, but the engineers agree to make the change in three hours.

Lake Shipbuilding.

Lately, from time to time, have appeared brief paragraphs on the amount of tonnage building on the great lakes, from Buffalo to Duluth, and the vast business of the shipyards of the lake region is beginning to be understood by the moneyed and commercial interests of the East. Below is attempted a somewhat more detailed and full account of what is being done and is in prospect than has been attempted heretofore.

Recent contracts for tonnage, made at lower lake ports, have placed every steel shipbuilding plant on the great lakes with work enough to keep them busy till the opening of navigation in 1893, and in some cases till far along in the summer. This is in marked contrast to the situation in English shipyards, which, though far from idle, are not supplied with work enough to give half employment to their forces. The shipbuilders of the lakes have, in the past two or three years, made enormous additions to their plants, both for the construction of ships, boilers, engines and tributary appliances, but extravagant as some of these additions may have seemed, they have all been shown to be no more than requirements, and that there will soon be still further increases to their lists seems to be undoubted.

The yard of the American Steel Barge Company, across the bay from Duluth, has berths for the construction of nine vessels of large size at one time, and the company have had as many as six on the stocks together. The Cleveland yards are of a size to build from three to six ships at once, and those of Detroit, Buffalo, Bay City and minor points are all large and equipped with the very best machinery and appliances.

The work of the present winter will not add so much to the tonnage of the freight fleet of the great lakes as did each of the five just preceding it, but the value of the work to be turned out is far beyond that of the two seasons just previous, and is nearly as much as that of any year in the last six, since lake shipbuilding became such an important factor in the industrial progress of the West. The total tonnage to be added will be in the neighborhood of 74,000 tons, not counting the passenger ships on the stocks as freight carriers, though they will carry some freight, and the cost of all this tonnage is estimated at about \$7,000,000. For the past six years the attention of vessel owners and builders has been directed almost exclusively to the putting together of fine freight carriers, to the detriment of the passenger service, and as a consequence the steel freighters of the lakes are, with few exceptions, superior in every respect—strength, speed, equipment, furnishings—to the passenger vessels. But a change has come this year, and of the tonnage now contracted for a very fair proportion is for the passenger service. Four of the largest of the shipyards, those of the American Steel Barge Company, the Globe Iron Works Company of Cleveland, the Detroit Dry Dock Company and the Chicago Shipbuilding Company, are engaged on passenger vessels that for size, cost, speed and beauty will take high rank. Almost \$3,000,000 of the total of \$7,000,000 will go into these nine boats designed for the carriage of passengers.

Of the 49 vessels under construction all but 14 are of steel throughout, and most of the wood vessels are to be small craft. Of the number 28 are for freight carriers, 9 are passenger vessels, 3 are for the revenue service of the United States and Canada, 2 costing \$500,000 are for railway car ferries, 3 are small excursion steamers, and the rest are tugs and the like.

The work of the shipyards, it being understood that there is included only

what is contracted for winter construction, has been as follows for the past seven years:

Winter of	Number of boats.	Tonnage.	Cost.
1886-87.....	31	65,750	\$4,075,000
1887-88.....	60	108,500	8,325,000
1888-89.....	50	101,000	7,125,000
1889-90.....	56	124,750	7,865,000
1890-91.....	38	77,950	5,337,000
1891-92.....	45	76,000	4,896,000
1892-93.....	49	70,000	7,000,000

Losses to the fleet that has so rapidly increased have been of rare occurrence, and have until this year been from easily explained causes, collision and the like, but this fall there have been a couple of disasters that, beside the deplorable loss of life that accompanied them, have upset many theories and have given fright to owners of other lake craft who had believed their vessels invincible by storm. These were the sinking of the "Western Reserve" and the "Gilcher," the going down of neither of which can well be explained except by the uncomfortable theory of structural weakness. This has already resulted in the specifications for the newer vessels being made with especial care, and the new fleet may well be looked on as typical in the highest degree of the best methods of American shipbuilders.

The business that is given these lake vessels is of course enormous, and can hardly be appreciated. The Sault Canal which passes to and fro the commerce of Lake Superior, last season reported 8,838,760 tons of freight, and this year will have passed not less than 11,200,000 tons, of which increase, by the way, nearly all was due directly to the growth of the marine trade of Duluth. Duluth's ship canal, allowing passage to vessels bound to that city, has passed this year a trifle over 4000 vessels, most of them of the larger class, for the smaller and older of the lake fleet are engaged in a trade on other lakes than Superior. These vessels have averaged 2000 tons of cargo each, making a total cargo passed to and from this young city of 8,000,000 tons. Those conversant with the figures will recollect that this is more both of vessels and of cargo than passed last year the Suez Canal, carrying, as it does, the commerce of half a world. The marine business of Chicago, a city of 1,250,000 people, was last season a little over 10,000,000 tons, so that the head of Lake Superior and the head of Lake Michigan are almost on a par, and together furnish the lake marine with a commerce of about 20,000,000 tons. The magnitude of this business opens one's eyes to the possibilities of the near future and to the development of the cities along the lakes both as builders of vessels and as originators of traffic.

The United States Supreme Court decided in the case of Henry Root, a New York engineer, against the Third Avenue Railway Company, that Root's patent for the invention of the arrangement of cable tracks now in common use is invalid. Root devised the rib or yoke attached to the cable slots of a road and imbedded in concrete. The purpose of the invention was to keep the cable in place under stress of heavy traffic. The invention was put into use at San Francisco, but Root did not take out a patent until 1881, more than two years later. Justice Blatchford, who rendered the decision, holds that this failure to take out the patent until two years after the invention had been in public use deprives the inventor of the right of royalty.

Secretary Rusk of the Agricultural Department, in his annual report just published, says we sent abroad last year \$200,000,000 worth of products more than we had to import from foreign nations, and 80 per cent. of these products were agricultural. Now, if by means of reciprocity

or otherwise, adequate markets can be obtained for manufactured products, the export trade will be still more flourishing

Treasury Decisions.

Iron Wire Netting.

Before the United States General Appraisers at New York, October 27, 1892. In the matter of the protest, 16,186-7657, of O. G. Hempstead & Son, against the decision of the Collector of Customs at Philadelphia, as to the rate and amount of duties chargeable on certain iron wire netting, imported per "Indiana," May 27, 1892. Opinion by Wilkinson, General Appraiser.

The merchandise is iron wire netting, made of wire smaller than No. 26 wire gauge. The wire is valued at over 4 cents a pound, and the specific duty upon it would not equal 45 per cent. ad valorem. The duty upon the wire is therefore 45 per cent., with an additional duty of 2 cents a pound upon the made-up article, all in accordance with the appropriate provisos of paragraph 148, N. T.

The claim that the netting is dutiable either at 3 cents a pound and 2 cents a pound additional, or at 45 per cent., under paragraph 215, is overruled, and the decision of the Collector is affirmed.

Steel in Coal-Oil Barrels.

Before the United States General Appraisers at New York, October 28, 1892. In the matter of the protest, 33,072a-18,488 of Miller & Van Winkle, against the decision of the Collector of Customs at New York as to the rate and amount of duties chargeable on certain steel, imported per "Nomadic," June 14, 1892. Opinion by Sharretts, General Appraiser.

The facts in this case appearing on the face of the papers are as follows—namely: The appellants purchased abroad certain strips or forms of steel not otherwise provided for in the tariff act than in paragraph 146, N. T. The price paid for this steel was less than 3 cents per pound. They also purchased coal-oil barrels of American manufacture, in which the steel was packed for transportation to the United States. The cost of the barrels and packing charges added to the value of the steel made the total cost thereof more than 3 cents per pound.

The Collector accordingly assessed duty on the steel at 1.6 cents per pound, under paragraph 146, N. T.

The appellants in their protest claim that the American coal oil barrels being entitled to free entry on their return to the United States, the Collector erred in adding the value thereof to the steel strips. This contention, in our opinion, is not well founded. Section 19, act of June 10, 1890, provides that whenever merchandise is subject to an ad valorem duty based upon or regulated in any manner by the value thereof the duty shall be assessed upon the actual market value or wholesale price, . . . including the value of . . . coverings of any kind, and all other costs, charges and expenses incident to placing the merchandise in condition packed ready for shipment to the United States, &c.

The merchandise in question is subject to a duty regulated by the value thereof, and the barrels were purchased and used as coverings therefor. It is not deemed material by us to inquire if, as alleged by the appellants, the barrels would have been entitled to free entry if imported empty. The facts justify us in holding that the Collector committed no error in adding the invoice value of the barrels, together with the cost and expenses of placing the merchandise in condition packed ready for shipment to the United States, to the value of the steel in the ascertainment of its dutiable value.

The protest is overruled and the Collector's decision is affirmed.

THE WEEK.

Argentine finances are a puzzle to their foreign creditors.

Many of the largest investment companies in Melbourne are slowly going through a process of liquidation. The inward rottenness of things cannot be fully exposed lest it should check the inflow of British gold. At present speculators are attracted by the South African boom.

Louisiana is greatly favored in all her crops. Rice receipts this year thus far are 250,000 sacks ahead of those of last year, an increase of nearly 46 per cent.

The strike of granite cutters at Westerly, R. I., prevents the removal of General Sherman's finished monument to its destination in St. Louis.

The New Orleans Board of Trade takes a profound interest in the Nicaragua Canal convention, which convened in that city on the 30th ult.

The Canadian live stock trade for the season just closed involved the principal dealers in heavy losses and American traders fared little better.

According to statistics just made public there are 950,000 persons imprisoned in 875 jails in Russia.

Of late, since China ceased buying cotton goods in this market, Hayti, San-Domingo and Brazil are our best customers.

South Dakota is gorged with wheat to such an extent that storage room is exhausted. The crop both in Dakota and Minnesota exceeds all estimates.

If the joint application of the Elevated Railroad Company and the Pennsylvania Railroad Company for a connection of the two systems at the Cortlandt Street Ferry shall be granted by the Rapid Transit Commission, a beginning will have been made of an important change in local transportation in this city.

The New York Board of Aldermen have granted permission to erect two bridges across the East River. Now all that remains is to get the money for construction.

The restriction of immigration by the Government, ostensibly as a precaution against cholera, is driving steamships out from the transatlantic lines. The Guion line are the first to reduce their fleet.

It is proposed at Topeka to erect eastern Kansas, which has a large manufacturing interest, into a new State.

One-third of the Chinese on the Pacific Coast are said to have left the country during the past year, and it is reported in San Francisco that the wealthy corporation known as the Six Companies will disband next February, when the Chinese year begins, most of the Chinese merchants in that city going out of business.

The French will probably have a new African colony in Dahomey, on the west coast, but they are gradually losing their hold on Madagascar, in the east.

Corn is being carried down the lakes, 900 miles, from Chicago to Buffalo, through November storms, at the rate of 2½ cents a bushel.

The sales of cotton in New Orleans in one day last week, just after the advance to 9½ cents in this market, comprised 203,800 bales, the largest in ten years. In New York sales for the day ran up to 556,000 bales, which surpassed the best record.

In contrast with the wasted millions at the Panama Canal, the boast is made that the only contract that was ever awarded and honestly carried out on the Panama Canal was held by an American contract-

or. It was the work of dredging in from Aspinwall toward the hills. The work was taken by Henry B. Slavin, who received his money, built a dozen of the most powerful dredges that have ever been constructed, took them to Panama and completed his contract within the time limit.

China, during the last fiscal year, took only \$10,540,000 of American domestic products, which is a decline of about \$3,000,000 compared with the previous year. Of late our exports of manufactured cottons to China have dropped almost out of sight.

Mr. Meyer of Cincinnati, co operating with the Chamber of Commerce and other public bodies, has commenced a crusade against the smoke nuisance by enforcing a city ordinance requiring the use of smoke consumers. Large amounts have been expended by manufacturers in experimenting with useless contrivances.

A Glasgow shipbuilder is reported to have received an order to build for a new company three steamers of 5000 tons each, that are to ply between London and New York.

A monolith weighing 600 tons has been detached from its bed in the quarry at Houghton, Michigan. Fifty workmen drove their wooden wedges simultaneously until a crevice appeared in the base of the stone.

The Knights of Labor have decided to sell their headquarters in Philadelphia and transfer the main office to some other city.

American manufacturers who seek to open a market in China for their goods labor under a difficulty in not understanding the requirements of the people. The United States consul at Hong Kong says that it is absurd to seek to introduce such machinery as saw and planing mills, mowing and threshing machines and harvesters into a country where there are no large farms or plantations, and where human labor is so cheap as to be a drug in the market.

California is increasing her shipments of canned fruit and salmon very rapidly, particularly in Europe.

The railroad "pool," as it is sometimes called, is said by President Roberts of the Pennsylvania line to have no other object than to place in the hands of Aldace F. Waller of the late Western Traffic Association the rate-making power in order to adjust equitably the rates upon the various competitive lines in the Trunk Line territory.

A new line of steel steamships will be run between Pensacola and Cuba by the Louisville & Nashville Railroad Company.

It is thought probable at Ottawa that, in view of the prospective changes in the United States Tariff, the new Canadian Government will considerably modify the Customs laws during the coming session of Parliament and tender more liberal measures of reciprocity.

A strong company has been formed to develop valuable iron and coal lands in Wyoming. The scheme includes 429 miles of new railroads in and adjacent to Seminole Valley.

The Supreme Court in this city decides that Outerbridge & Co., in carrying freight from New York to the Windward Islands at a low rate as against competitors, are not guilty, as charged, of unjust discrimination. Being a foreign corporation which has never exercised the right of eminent domain, the company is a "simple" common carrier, unassisted by, and therefore without obligation to, the public.

The Iron Age

New York, Thursday, December 1, 1892.

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CHAS. KIRCHHOFF, - - - EDITOR.
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JOHN S. KING, - - - BUSINESS MANAGER.

The Billet Trade.

The extraordinary movements in the soft steel markets have attracted a good deal of attention. The rapid rise, owing to a temporary scarcity for prompt delivery, and the very quick collapse have been puzzling to a good many. All kinds of stories have been afloat, among others the familiar tale that a large concern had been caught heavily short to the extent of 60,000 tons. Whatever may have been the facts, there is little question that the recent sharp advance has taught buyers and sellers as well an important lesson.

People are beginning to realize how enormous must be the current consumption of soft steel. In a good many individual cases it has failed to attract any attention. A good many small iron mills have been buying moderate lots of steel in the place of iron. Each single one would not be considered worthy of notice, but the aggregate of these requirements is a more important feature in shaping values than has been acknowledged thus far.

Of course, the steel rail situation has been the principal argument urged against any sustained recovery in steel billets and slabs. So long as the famine of rail orders continues the great works will take hold of billet orders at very close figures, merely to keep their organizations in good shape and work off accumulations of raw materials. Some of them are now well equipped for the soft steel trade and may be expected to remain in it.

Another factor which is expected to retain its influence for the present upon values is the low price of lake ore, which in turn seems to keep the price of Bessemer pig down to a low range. While the sources of supply for soft steel have been considerably enlarged by the temporary inactivity of the rail mills, the demand, so far as the open market is concerned, has been restricted. The leading consumers in the Shenango Valley have ceased to be buyers of billets, and the plant which they have started is, to a moderate extent, marketing a surplus. The Mahoning Valley interests are preparing to follow the example thus set. In the Pittsburgh district the large pipe concern is building a plant, and now comes the announcement that the new Consolidated Steel and Wire Company is to go into the manufacture of steel also. It is evident, therefore, that consumers who lately were and are still heavy buyers of soft steel in the open market are destined in the next year to withdraw from it and to become, in some instances, sellers of surplus product.

It remains to be seen whether these additions to plant will prevent the creation of a scare like that witnessed this fall, even at times when the rail mills are actively employed and neglect the soft steel trade. At the rate at which puddling is still going on there is good reason to believe that the consumption of soft steel can still materially increase. If it does, there is always the possibility of a temporary scarcity with the squeeze in prices with which it would be coupled.

As yet the South is no factor in the situation, but it would be unwise to ignore it when dealing with the broader development of this trade. Southern iron makers are eager to give it a trial, and have some points in their favor. The Talbot process has given very encouraging results and promises to remove the bugbear of high silicon in a basic pig. The Southern men look longingly to the rail trade. We believe they are making a mistake in allowing their hopes to drift into that channel. They would do a far wiser thing if they gave special attention to the soft steel trade, in which they have the chance to take the local markets, relatively insignificant as they are. So long as Northern Bessemer pig is low, they have little chance of marketing product north of the Ohio River.

Transit by the Isthmus of Panama.

Very grave questions, involving international rights, have suddenly arisen between the Pacific Mail Steamship Company and the Panama Railroad Company, threatening a complete suspension of American traffic across the Isthmus of Panama. The trouble was precipitated by the action of the Panama Railroad Company in serving a notice on the Pacific Mail people that, after February 1, no through bills of lading from the Atlantic to the Pacific Ocean would be accepted from their American representatives. Of course this proceeding called for the immediate interposition of the courts, and accordingly last Friday a temporary injunction was obtained on behalf of the Pacific Mail Steamship Company to prevent the execution of a purpose so directly inimical to American interests. This purpose, as charged, was to discriminate against the Pacific Mail Company, regardless of alleged treaty obligations, by transferring all passengers and freight direct to the Chilean line of steamers, said to be controlled by British capitalists, and of which Wm. R. Grace & Co. of this city are the financial agents. To this company were to be given exclusive privileges, necessarily fatal, so it is assumed, to the coastwise business between New York and San Francisco via the Isthmus route. The Panama Railroad, on the other hand, contends that, so far from being un-American or encouraging monopoly, it is openly striving to encourage the formation of new lines, and is anxious to find American ships sailing regularly between New York and Colon to aid it in its business. There are no French or foreign interests of any

kind involved in it, except so far as the mere ownership of stock may be concerned.

In relation to this suit James B. Houston, vice-president of the Pacific Mail Steamship Company, has made an explanatory statement:

The contract between the Pacific Mail Steamship Company and the Panama Railroad Company, made in 1878, expires by limitation February 1, 1893. All the conditions of this contract have been kept by both companies. For nearly a year past discussions in regard to the renewal of this contract have taken place between the officers of the two companies, and in the early part of September an agreement was drawn up renewing the contract, which agreement gave a slight advantage to the Panama Railroad Company over the one now in force. Just previous to the signing of this new contract the Pacific Mail Steamship Company received notice from the Transcontinental Association that the guarantee (\$75,000 per month) heretofore paid on business between the Atlantic and Pacific ports of the United States would be discontinued. The receipt of this notice was immediately communicated to the Panama Railroad Company, but, notwithstanding the fact that the rates on freight were so low between New York and San Francisco as to render it impossible for the Pacific Mail Steamship Company to pay \$40,000 per month, the railroad company insisted upon having such a guarantee, in the absence of which it threatened a dissolution of its relations with the Pacific Mail Steamship Company and to throw the business over to some other line.

Already the Government at Washington is giving attention to the alleged disregard of treaty obligations implied in the foregoing statements of the situation, and it will not be strange if the State Department finds itself constrained to make some expression with reference to the protection due to American interests. Meanwhile the various points in dispute will soon be determined by the courts. Fortunately, in any event, the clipper ships put on by the merchants will be a bar to excessively high rates of freight to and from the Pacific Coast. Moreover, the Nicaragua Canal scheme and the Tehuantepec Railroad, now being vigorously prosecuted by the Mexican Government, will come into increased prominence should any interruption occur at the Isthmus.

The Consolidated Steel and Wire Company.

The particulars of one of the most important events in the history of the wire trade have just been made public, foreshadowed in *The Iron Age* some weeks since. Five large companies—the Iowa Barb Wire Company, the St. Louis Wire Mill Company, the Braddock Wire Company, the Lambert & Bishop Wire Fence Company and the Baker Wire Company—have merged their interests in one corporation named the Consolidated Steel & Wire Company, organized under the laws of the State of Illinois with a capital of \$4,000,000. Various rumors have been afloat for some time with regard to this new company. The I. L. Ellwood Mfg. Company were generally supposed to be among the interests to be included in the organization, but it will be seen from the above statement that only those companies have amalgamated which have for

some years been owned practically by the same stockholders. No attempt has been made to gather promiscuously all the wire mills of the country into one great combination. The union consummated merely brings into closer relations and perhaps under more systematic management the widely scattered parts of a group of wire manufacturing concerns known to be very closely related in ownership. It may be regarded as the legitimate result of the failure of the Columbia Wire Company to realize the purposes aimed at when that company was formed. The barb-wire and wire-nail trades have been sadly demoralized since the retirement of the company as a commercial factor, and the profitless condition of these branches of business necessarily suggested plans for retrenchment of expenses.

The aggregate output of these five companies is enormous. All have wire-drawing plants, with a total annual capacity of 275,000 net tons. The Iowa Barb Wire Company and the Braddock Wire Company have wire rod mills which are together capable of producing about 90,000 net tons of rods per annum. The Braddock Wire Company, the Lambert & Bishop Wire Fence Company and the St. Louis Wire Mill Company manufacture wire nails, having a total capacity of 5000 kegs daily, or in round numbers about 1,500,000 kegs per annum. All of them manufacture barb wire, their aggregate annual capacity being placed at 120,000 net tons. There is no doubt that the Consolidated Steel & Wire Company are now the largest drawers of plain wire and the largest makers of barb wire and wire nails in the world. Their plans, however, contemplate further enlargement. They intend to begin the erection at an early day of blast furnaces, a steel plant and two additional rod-rolling mills, which will render them largely independent of the producers of such materials as they are now obliged to purchase from other manufacturing establishments. The location which will be favored with these new enterprises has not yet been disclosed, but indications point to the vicinity of Chicago.

The circular letter from the company to the trade, which will be found in our Hardware department, gives a number of particulars regarding the commercial scope of this new organization. The general offices will be in Chicago, but branches will be located at New York, Pittsburgh, St. Louis and San Francisco. The entire country will thus be covered by the company's representatives, while it is known, although the fact is not made conspicuous in the circular, that a stronger effort will be made than ever before to build up a large export trade. The managers of the company feel that the manufacturers of this country have a natural right in certain markets, and that the way is open for commercial success in that direction if the proper vigor and business sagacity are brought to bear. As to the influence of the company in domestic markets, their competitors will probably be quite competent to judge. Scattered

plants may be regarded by some as an element of weakness, but with able management they are in better shape for conducting a very large trade than if concentrated at one point. Especially is this the case with such products as plain wire, barb wire and wire nails. The men who have built up such establishments as these were separately may, we think, be relied on confidently as possessing the requisite ability to operate them conjointly.

High-Pressure Boilers.

In a paper before the Mechanical Section of the British Association, B. H. Thwaite laid down some general rules governing the design of boilers intended for high pressures, and showed designs made in conformity with these rules. He stated that by the proper application of the laws involved in the production and maintenance of circulatory currents, a condition of flow can be established of such an erosive character that the deposit, whatever its origin may be, can never retain its position on the plate because, together with the heat of combustion that would bake any calcareous deposit on the flue, there is established such an erosive character of circulatory current that the lime or other matter deposited is eroded and swept into suspension. Following this we find the remark that "the distribution of the water space and elements of heat transmission should be such that the circulation currents will be definite and distinct. The upward or ascensional currents should not clash with the downward flow or descensional ones." In order to meet the influences of the several active conditions as far as practicable the following axioms of perfect steam generator design are suggested:

1. The application of heat to the internal flue or other heating surface should be as uniform as possible.
2. The heating surface exposed to the most intense zone of combustion should be covered with active currents of a well-defined direction, and of such an erosive character as to absolutely prevent the settled deposition of calcareous or other matters of a heat-non-conducting character.
3. The structural characteristics of the heating surface just described should be of a flexible character, so that the maximum metallic dilations shall be easily compensated for in the range of flexibility.
4. The structural character of the heating surface should be such as to promote a distinctive direction of circulation so as to avoid the clashing of the currents.
5. The arrangement of parts should include the provision of a foreign substance depositing vessel, quite removed from the zone of heat, and such as to be easily accessible for examination.
6. There should be no metallic part of the structure so rigidly formed that the expansion or dilating influence of heat to which it may be subjected shall produce dangerous stress.
7. The form of construction should be such as to permit pressures up to 300 pounds per square inch to be obtained without necessitating an abnormal thickness of shell plate.
8. The steam generator should be accessible for examination on all sides.
9. The chemical action of combustion should be thoroughly under control, so that absolutely perfect combustion shall be possible.
10. Both the rate of producing combustible gas from the solid combustible and the supply

of the volume of air for its oxidation or combustion should be under control.

11. The external or outer shell radiation should be reduced to the lowest limits.

Having read with attention these axioms laid down by the author, we examine with interest "An attempt to satisfy the laws of good design by a modification of a vertical flue and tubulous boiler," and also a horizontal type of tubulous steam generator. The first boiler consists, in brief, of coiled pipes which are as nearly horizontal as it is possible to make them. In the second type the radius of the reverse curves is larger, and the lines of pipe are therefore at a greater angle to the horizontal. In both cases the flow of water from the upper part of the boiler to the lower takes place outside of these tubes and consequently in a comparatively cool part. It is not necessary to go further into the details of the construction of these boilers.

These boilers, as do many others now in the market more or less prominently, violate one fundamental law governing all transmission of power. It will be conceded without dispute that, no matter what the character of the power may be, the nearer it is utilized to its source of supply the greater will be the economy. With every extension to a line of shafting and with every foot added to an electrical conductor there is a corresponding decrease in the amount of power ultimately developed. The same is true of the steam boiler. The most active work is performed by the fire in that part of the boiler nearest to it and the least work in that part furthest from it. Hence it follows that steam is generated more rapidly immediately over the fire than at any other point. At this point, and points further removed from the fire, we have a mingling of water and steam.

We now approach one of the most, if not certainly the most, essential questions influencing the designing of boilers. How is the steam here present to be separated from the water and conveyed to the highest point of the boiler with the least loss of energy in the shape of heat? Evidently not by compelling it to force its way through an interminable length of coiled or curved pipe, when the question of friction alone enters as a by no means insignificant factor. Yet this is the ideal design proposed, and it is one not uncommon in actual practice. As in other cases of the transmission of power, so in this: the most direct line from the hottest pipe to the steam drum is the most economical. There is a natural tendency of this steam to separate from and ascend above the water; therefore, the more closely we can imitate this characteristic the better we shall be off. Such being the case, a vertical tube serves best to fulfill the conditions. In it we have friction reduced to a minimum; we produce a quick separation of steam and water, and we compel the steam to travel the shortest possible route:

Boilers belonging to the extreme branch of this class are claimed to have great heating surface, and to be rapid and economical steam generators. In a horizontal pipe

the steam is free, other influences ignored to travel in either direction. A slight inclination governs the direction of its flow, which increases in rapidity as it approaches the vertical. Now it is possible to generate steam so rapidly as to practically choke the flow and to reach a limit in the speed. When the steam has a long and circuitous road to travel in order to reach the steam drum, its rate of travel is slow because the slight inclination of the pipe it travels in almost offsets the tendency it has to rise, or its buoyancy, as we might term it, and the friction is excessive. To overcome these retarding influences is the work of the new steam generated behind it, and which practically pushes it along and forces it over the obstructions. We cannot, therefore, consider the boilers presented by the writer of the paper to be in any sense ideal. The steam is made to travel too far and through too small a pipe. With the other questions influencing the mechanical or constructive part of the problem, we have now nothing to do. The axioms cited by the writer might be more appropriately called platitudes, and are of course accepted by all.

The probable sharp competition for business among the beam mills, now all running, has given rise to some comment. Some of the older mills do not possess the plant and equipment which will allow them to reach a satisfactory tonnage or work at a low labor cost. It is widely believed in the trade that some of the manufacturers must either completely remodel or be content to drop to a relatively low rank. It is understood that at least one leading Eastern mill did contemplate a radical overhauling some time since, but that that project is now in abeyance. It is predicted that at no distant day the iron trade will witness a remodeling of a few plants and the practical withdrawal of the others unable or unwilling to keep plant up to the latest notch of progressive American practice.

OBITUARY.

EMERY PARKER.

Emery Parker, one of the oldest lock manufacturers in the country, died at his home in New Britain, Conn., on the 17th ult., in the sixty seventh year of his age. Mr. Parker is referred to as having had more to do with the revolutionizing of the lock business than any other man. He was the inventor of the steel key for locks, the introduction of which completely changed the lock business, and we believe that the steel keys in use to-day are all founded upon his original key patented in 1869. Mr. Parker was superintendent of the Russell & Erwin Mfg. Company for 14 years and subsequently was connected with the Nashua Lock Company, with whom he went to South Norwalk, Conn., when that company was consolidated with the Lockwood Mfg. Company. Here he continued in charge of the manufacture of the Nashua locks until the winter of 1891. Mr. Parker then went to Anderson, Ind., in the interest of the Arcade File Works, and spent several months there supervising the erection of their new plant, and it was a source of

regret to him that his ill health compelled him to discontinue the work before the completion of the plant.

PETER LAMP.

The death is announced of Peter Lamp, president of the Lamp & Miller Mfg. Company, Milwaukee, Wis. Mr. Lamp died on Sunday, November 20.

American Society of Mechanical Engineers.

The thirteenth annual meeting of the American Society of Mechanical Engineers is now being held at the home of the society, 12 West Thirty-first street, New York. There are some 400 members and guests in attendance, and judging from the interest so far manifested and the value of the papers presented, the meeting promises to be one of the most noteworthy in the history of the society.

At the first session on Tuesday evening, the president, Charles H. Loring, Chief Engineer United States Navy, welcomed the members and their friends in a few appropriate and hearty words, after which he presented his address entitled

The Steam Engine in Modern Civilization.

"Then everything includes itself in Power."

The great historian who looks back a century hence upon the present era, with its numerous ramifications condensed by time into one focus, wherein the smallness of the field and the intensity of the light enables him to see plainly what we now only dimly discern, will point out that the great underlying cause of the wonderful progress made by mankind during the last hundred years was the steam engine.

And why should this particular machine have produced such amazing results?

Many other machines which preceded and accompanied its development are quite as ingenious mechanical combinations and involved quite as much knowledge and skill in their conception and construction as the steam engine, but the effects of which were, comparatively, both local and trivial, producing scarcely a ripple on the current of human affairs. Had they never been, the world would have lost but little.

The answer is that the steam engine, with all its simplicity, is what no other machine ever was, the creator of physical power, and this to so enormous an extent, at so small a cost, in so portable a form, and with such convenience of application, that it speedily revolutionized the economy of labor, and in so doing necessarily revolutionized all the conditions of man; for they all have been dominated by the labor question—the great bread-and-butter problem—since the primal curse was branded on the brow of the first man. It was to the relief of all mankind, in the struggle to find what to eat and wherewithal to be clad, that the immortal inventor of the steam engine gave to the world the finest solution of the problem it can ever hope to receive.

He builded wiser than he knew.

He retired contented with the profits of his invention, and died without dreaming that he had placed on earth an infant Hercules whose club, with an ever-increasing might, would batter down the institutions of preceding ages; whose right arm, endowed with an ever-increasing power, would erect those of succeeding ages on foundations as different as strength differs from weakness, making possible the wonderful development of the man of the past into the man of the present.

All that man has he has obtained from the earth and is the direct product of physical labor, and the sum of his possessions is directly as the quantity of this

labor expended. So long as this was manual labor, his possibilities were limited by the number of men available.

Here was the barrier that confronted the man of the past, and until the advent of the steam engine progress was necessarily difficult and slow; and the little which was made in the centuries during which he had plodded upon earth was local, confined to few localities, and at the expense of progress elsewhere.

The civilizations of antiquity were limited to a few cities, and were based upon slave labor, the slaves being drained from other places, which were thus doomed to deepening barbarism.

The limit of possible slavery was the limit of the ancient civilization. When the maximum number of slaves who could be advantageously supported on any particular territory was reached, civilization stopped, except where direct robbery of other territory enabled it to maintain a fatuous existence; and the limit here was soon reached, for this was a system of "killing the goose that laid the golden egg."

The disgrace of the ancient civilization was its utter want of humanity. Justice, benevolence and mercy held but little sway; force, fraud and cruelty supplanted them. Nor could anything better be expected of an organization based on the worst system of slavery that ever shocked the sensibilities of man. As long as human slavery was the origin and support of civilization, the latter had to be brutal, for the stream could not rise higher than its source. Such a civilization, after a rapid culmination, had to decay, and history, though vague, shows its lapse into a barbarism as dark as that from which it had emerged.

Modern civilization also has at its base a toiling slave, but one differing widely from his predecessor of the ancients. He is without nerves and he does not know fatigue. There is no intermission in his work, and he performs in a small compass more than the labor of nations of human slaves. He is not only vastly stronger, but vastly cheaper than they. He works interminably and he works at everything; from the finest to the coarsest, he is equally applicable. He produces all things in such abundance, that man, relieved from the greater part of his servile toil, realizes for the first time his title of Lord of Creation. The products of all the great arts of our civilization, the use of cheap and rapid transportation on land and water, and of printing, density of population everywhere, the instruments of peace and war, the acquisition of knowledge of all kinds, are made the possibility and the possession of all by the labor of this obedient slave which we call Steam Engine. He is no product of nature, but purely the creation of art alone. He works for all alike, and he works forever. His labor fills the earth, and makes manifest the latent virtues and intelligence of our race. The immense ameliorations of modern society are due to the same cause; and so great is the beneficence, that, without irreverence, the steam engine may be truly called the material savior of man.

We who were born under this benign influence but vaguely appreciate its value, and rarely recognize our obligations to it; existing civilizations would be impossible without it, and if human ingenuity finds no substitute for it they will perish with it.

The steam engine is a machine which has been the prolific parent of other machines. It has caused the invention and construction of the immense plant of ingenious power tools employed in its own fabrication; it has caused the improvement of metallurgy as a science and of the various methods of metal manufacture as an art; it may be said to have created whole branches of important manufact-

ures, and to have been the occasion of the invention of the immense mass of highly diversified machinery by means of which these manufactures are practiced; and, last and greatest, it has stimulated and directed the human intellect as nothing else ever has, and has done more to advance human nature to a higher plane than all which statesmen, generals, monarchs, philosophers, priests and artists have ever accomplished, in the vast interval which separates original man from the man of to-day. It has raised man from an animal to something approaching what a great intelligence should be, by simply placing in his hands a limitless physical power capable of application in every conceivable direction and to every conceivable purpose.

These words are no extravagant encomium; they are a simple statement of momentous facts, which, however, the mass of mankind seems so little to understand and appreciate that I have ventured to give them record in an humble endeavor to prevent their being entirely overlooked, and with a hope of their eventual recognition.

Contemporaneous historians have but scantily drawn attention to the immense influence exerted upon modern history by the steam engine. They follow in the same well-worn ruts, giving dubious descriptions of battles, names of monarchs and of statesmen, lists of decrees and laws, no end of political negotiations and intrigues, and the whole array of puppets who seem to push the car of time, while they are only flies upon its wheels. The real shaping cause of the march of modern events and of the great industrial progress of the times has but trivial recognition in the literature which pretends to account for what has happened or to predict what may ensue. One of the peculiarities of the genesis of the steam engine is that it seems to have been more in the nature of a creation than of an evolution; for it was carried by its inventor, both as regards principles and practice, to a wonderful state of completeness. Very little has been added by his successors to his mechanical details or his various combinations of them. The invention seems to have nearly realized the birth of Pallas. The only modification in which he was not concerned is that of using the same steam in successive cylinders of increasing capacities, thus forming what may be termed, for the sake of distinction, the multiple-cylinder engine as opposed to the single-cylinder engine. The original multiple cylinder engine of Hornblower, brought out in 1781, and since known as the compound engine, and, by extension of the principle, as the triple-expansion engine and the quadruple-expansion engine, had thus a beginning almost coeval with the single-cylinder engine of Watt. After much litigation it was declared to be an infringement on Watt's patents covering the use of steam expansively, and it passed out of use. It did not, in fact, give any economic gain over the single-cylinder engine, as the pressure of the steam was the same in both and only a few pounds above the atmospheric pressure, limiting the measure of expansion for maximum economy to about one and a half times. With this low pressure of steam and for the small powers used in those days there was no mechanical difficulty in developing the whole power in one cylinder with all the economy possible. To obtain higher economy, higher pressure was a necessity, and pressure is solely a question of boilers. At that time the art of boiler making was so inchoate that sufficient strength of generator could not be obtained for greater pressure, and the development of the steam engine could not progress much, if any, faster than the art of boiler making; in fact, no one improvement in mechanics can advance much beyond the general front of what

may be termed the industrial progress of the age. Aided by the improvement in the boiler maker's art, the conspicuous advance which has been made with the steam engine is the direct result of the higher pressures of steam used.

The economic necessity for employing these higher pressures has brought into vogue again the multiple-cylinder engine, which enables the steam to be used with a regimen not practicable with the single engine, and this regimen is attended with enormous economic gains. In the first place, what may be termed a "given quantity of pressure"—that is to say, the product of a given weight of steam by its pressure—is larger proportionately to the heat required to evaporate that given weight the higher the pressure at which it is evaporated. The heat per pound of water vaporized from a given temperature, it is true, increases with the pressure, but the quantity of pressure produced under the greater pressures by a given quantity of heat increases in a higher ratio. The gain thus derived in the production of the pressure is very considerable.

Taking 50 pounds per square inch above the atmosphere as that usual with single engines of anything above small dimensions, and 150 pounds above the atmosphere as an easily worked pressure with multiple-cylinder engines, the gain in heat by the higher pressure used is about one-twelfth—a significant amount, but much less than what is additionally gained by the advantageous use of a greater expansion of the steam made possible by the greater pressure.

With the 50 pounds pressure, no gain is obtained by expanding the steam more than about three times, while with the 150 pounds pressure the expansion can be advantageously carried to about six times.

The result of both these economies is that the multiple-cylinder engine of the triple expansion kind produces the horsepower with about two-thirds the coal that the single-cylinder engine does. Or, otherwise expressed, the single-cylinder engine, under the given conditions, would require about 50 per cent. more fuel for a given power than the triple-expansion engine. These are the mean figures for ordinary practice, which may be varied considerably for extreme and exceptional cases. The gain would be much greater than stated were it not that the higher pressure is accompanied by higher temperature, and therefore the gases of combustion must leave the boiler at a correspondingly higher temperature. Thus the economic vaporization of the boiler is less with the 150 pounds pressure than with the 50 pounds. Obviously, too, the higher temperature is accompanied by greater heat radiations from all steam surfaces and the higher pressure by greater steam leakages past the valves and the pistons of the cylinders.

If the original steam engine was the greatest boon mankind has ever received, an increase of its value by one-third over its best development should add proportionately to the benefaction, and such is the industrial effect of the modern steam engine in its most advanced stage. The engineering world has "improved upon its heritage and vastly bettered its instruction." But it cannot proceed much further on the same lines, for with much higher pressure than has been already used the temperature or the steam would be too great to permit the metals to work satisfactorily on each other, while all the deducting losses would increase in a more than corresponding ratio.

The consequences of decreasing the cost of power by so large a fraction as one-third are very far-reaching, far beyond the mere cheapening to that extent of products already manufactured; for it allows other manufactures and other great works to be undertaken, which, with the

reduced cost of power, become remunerative, but which at a higher cost would not have been undertaken. The benefits of cheapening power increase in a geometrical ratio; they radiate as from a center.

This great improvement in the steam engine, adapting it to higher possibilities and greater radius of action, has carried with it all matters germane to it, and not the least among these is the enormous impetus and extension which it has given to mechanical science and art everywhere, making the engineer, by whatever name or title his specific work may designate him, the most potent factor in the world's progress, and "in the great work"—quoting from one of my eminent predecessors—"of emancipating mankind from the trammels of his animal nature."

Following as a natural sequence the recital of the potent influence of the steam engine upon man's social and physical conditions comes the question, Is it to continue as the great power-producing machine of the future? Can the inventive mind of man and his artful hand bring into being any other device as a substitute for it that will do its work cheaper, better and more handily?

To give answer to this is to say how it can be done, and as yet none is ready with a reply. Without doubt there are still "more things in heaven and earth than are dreamed of in our philosophy," but in the contemplation of a solution of this question, that already dreamed of is the limitation of our resource. Already we are beginning to avail ourselves of the enormous energy of water power, now going to waste, through the convenience of electrical transmission and distribution, and the hand of the "Wizard" has drawn faint electrical energies direct from the combustion of fuel.

The winds and the tides and the rays of the sun have locked up within themselves enormous stores of power, waiting, perhaps, for the ingenuity of man to unbind and convert them to his uses.

But when all shall have been realized which these as yet unused resources offer to man, when all man's present knowledge shall have ended in fruition, the steam engine, from its portableness, its convenience of application, and its self-containedness, will still remain man's valued servant, the grandest conception of the human mind, the great conservator of the human race.

Nicholson Henderson of Ogdensburg, N. Y., has just completed drawings for the proposed new steel steamer to be built in England for the Montreal Transportation Company. The dimensions will be: length over all, 254 feet; beam, 40 feet; molded depths, 23 feet; depth of hold, 40 feet. She will be fitted with a triple-expansion engine of 1000 horse-power, and steam will be generated in a battery of steel boilers, capable of standing a pressure of 170 pounds to the square inch. She will make 12 miles an hour, loaded, and 13½ miles an hour when light. The new boat will be constructed entirely of steel—hull, deck, cabin, masts and all—and her capacity will be 62,000 bushels of wheat when drawing 14 feet of water and 85,000 bushels at 17 feet. Six working hatches will be placed in her, affording good facilities for loading and discharging. It is estimated that with the equipments the Montreal Transportation Company possesses, she can be unloaded in less than 24 hours. When constructed she will possess eight water compartments under her flooring, and one will be situated in her stern, the lot capable of holding 800 tons of water. It is intended that when the vessel is sailing light the under compartments will be pumped full of water to give her ballast, and the one in her stern is to make her prompt in answering the

rudder. She will be sharp at both ends and very wide amidships. This will guarantee perfect and easy steering. She is modeled after the style of boats known as spar-deck steamers, with three masts and a single screw, and will have commodious quarters for officers and crew. Her estimated cost is between \$150,000 and \$155,000.

CORRESPONDENCE.

Discrepancy in Chemical Work.

To the Editor: Dr. Dudley's paper on "Discrepancy in Chemical Work," an extract of which appeared in *The Iron Age* of the 24th inst., is most timely, and though it certainly would be very desirable to arrive at absolute uniformity in results of analysis, I, for my part, am unable to see how it can be done as long as one serious cause of discrepancy remains—viz.: non-uniformity of material, a defect which is quite common with Bessemer steel, and from which open-hearth steel is not entirely free either. For this reason discrepancies can not be entirely avoided, no matter how capable the chemists may be who are working on the same material. The remedy proposed by Dr. Dudley for overcoming the difficulty—viz., the specification of certain methods for comparative work—will, therefore, only serve as an indicator of the standing of the chemists.

Next to non-uniformity of material, "poor manipulation" is indeed a serious fact that sometimes confronts the chemist who is called upon to certify analyses made at some mills, where lightning speed and quantity are more aimed at than quality. Owing to the unsatisfactory quality of the material from which the chemists in charge of laboratories at mills are compelled to recruit their "help," "poor manipulation" will probably always remain a source of trouble. I have had some experience in this line myself and been compelled to receive as assistants college graduates skilled enough to find anywhere from mere traces to 0.3 per cent. of phosphorus in material that averaged about 0.08 per cent., and who showed proportionate ability on other work! Because of the swarms of scientists who are turned out annually at the colleges, almost every small mill can now boast of employing a "chemist" at about the same liberal compensation that is bestowed on the mill hands. Though "poor manipulation" is worse than no manipulation at all, I suspect that discrepancy in chemical work will continue as long as poor manipulators are allowed to manipulate where somebody's pocket is involved. As the methods employed in chemical work have also been mentioned as a cause of discrepancy, I will conclude by stating that I have found at least one titration method for phosphorus determinations as practiced by manipulators at several mills to give invariably too low results.

Yours truly,

WM. MOLIN.

NEW YORK, 18 and 20 Liberty street, November 28, 1892.

The Copper Situation.

NEW YORK, November 29, 1892.

To the Editor: Permit me to say a few words on the copper situation. The price of copper shows a marked improvement since a few weeks. Consumers come in and buy from hand to mouth, but still decline to lay in a stock. It is the old story, so long as consumers do not realize the possibility of an improvement, so long do they keep out of stocks, but if they find a steady improvement in the price, and that quotations remain stationary at a higher price, then they come in as buyers in a rush, thus helping to advance the price still more. It cannot be denied that for

the last two years they have found it profitable to keep as bare of stocks as possible, but it seems as if the time of depression of the copper manufacturing trade was over. The demand in our country is certainly increasing, due to the development of electricity. Professor Douglas gives the consumption of copper in the United States *per capita* in 1880 1 pound, in 1889 2½ pounds, the latter based on a population of 61,000,000. The *per capita* increase is plain enough, and with the growing wealth of the people and the larger uses of electricity there is no reason why we should not require 300,000 tons of copper in the year 1900 to satisfy the demands of this country alone, or about 75 per cent. of the world's present annual production. Dealing with this year's demands, we notice a very noticeable increase for all uses.

Taking the price of the metal over an average of years, we find that it is at present below the average, and at a very moderate figure. The supplies are not in excess of the demand; producers have come to a very sensible business understanding, to curtail their production by 6½ per cent. in order not to overstock the market, and have also agreed not to undersell each other as in former years. In Europe the situation is encouraging. The European producers, controlling Venezuela, Chili, Cape of Good Hope, Spain, &c., agreed to reduce their output 5 per cent. and arranged that only 40,000 tons per year can be exported from the United States, an export which will probably not be reached at all this year. Hence the visible supplies in England and France have fallen off considerably.

On November 15 this visible supply was 54,356 tons, against 56,078 tons on October 31, 1892, 59,815 tons October 31, 1891, 68,225 tons October 31, 1890, and 103,540 tons on the same date in 1889. It is expected that on November 30 the visible supply will show a further reduction.

On the other hand, deliveries in England and France have largely increased, proving conclusively that trade has improved to a great extent. On the basis of the previous four months the deliveries of the first two weeks in November should have been about 4500 tons, but they reached 6833 tons. If the last two weeks of this month should show the same amount of deliveries, then even the exceptionally large delivery of March will be exceeded by 1800 tons.

In view of such figures the statement of artificial manipulation of higher quotations in England seems to be made only to allow certain European metal dealers to cover their short sales, and subsequently to lay in stocks.

COPPER.

The Colorado Coal & Iron Stocks.

On November 28 the Colorado Fuel & Iron Company's securities were placed in the unlisted department of the New York Stock Exchange. The exchange will be as follows:

Each share of the Colorado Coal & Iron stock will be entitled to four-tenths of a share of the Colorado Fuel & Iron Company, and six tenths of a share of the Colorado Coal & Iron Development stock. Each share of the Colorado Fuel preferred stock will be entitled to one share of the Colorado Fuel & Iron preferred stock, and each share of the Colorado Fuel common stock will be entitled to one and three-fourth shares of the Colorado Fuel & Iron Company's common stock.

The opening prices were \$65 for the Colorado Fuel & Iron stock, and \$26.50 for the Colorado Iron & Development stock. On the basis of exchange these quotations are equivalent to \$41.50 per share for the Colorado Coal & Iron stock—the current quotation. The \$26.50 per

share represents a value of \$1,590,000, for the iron and development property. The company was recently offered \$3,000,000 for the same, and claims to be able to dispose of it for \$4,500,000 at a forced sale. The claim is made that the steel plant at Pueblo is about to begin active operations, having orders on its books which will insure a continuous run.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., November 29, 1892.

There is an active correspondence going on by the manufacturers in all branches of industry and from all sections of the country with the Treasury officials and others in Washington who are presumed to have the gift of speculation or prophecy to an exceptional degree, being nearer the focus of political sentiment. The President is the best exponent of Republican policy for the future. This will be visible in his forthcoming annual message. The President will, in that document, not simply confine himself to a *résumé* of his own administration of public affairs, but will reaffirm and emphasize his confidence in the wisdom of the policy of protection.

In conversation the President expresses the opinion that if an attempt is made to materially reduce the duties on imports the effect upon manufactures and the American markets will be of such a character that a reflex tide of public sentiment will be sure to follow.

Secretary Foster, speaking of the public finances, says that while the current resources of the Treasury are much strained to meet the enormous demands for pensions, he will not only be able to have funds to meet all engagements until March 4, but his successor will be able to carry on the fiscal branch of the Government with present resources until the end of the fiscal year, or June 30.

Although the Secretary ought to know, there are many who accept this declaration with incredulity.

The deficiency of some \$30,000,000 on account of pensions, however, in its present stage, is not a deficiency of cash, but a deficiency of appropriation, the amount of the pension appropriation for the year being exhausted, Senator Morrill of Vermont, chairman of the Senate Committee on Finance, says that none of the tentative tariff bills which passed the House, and are now in his committee, will pass the Senate. The lead-bearing silver ores and tin plate are not likely to pass the Senate, but there is some talk of a Northwestern weak-kneed Republican Senatorial reelection combine which may knock the venerable Senator's calculations askew, especially on binding twine. The whole fate of the nation, from the Northwestern agricultural standpoint, is suspended from that slender thread, and if not made free a calamity worse than the misfit comet is predicted. Senator Morrill thinks that the President will not approve any bill passed under such circumstances.

An attempt will be made in the House to pass the tentative bills in the Committee on Ways and Means, but should they succeed they will not pass the Senate. These bills reflect the disposition of the tariff reformers to make a raid on iron and steel. Whiting of Michigan has in a bill reducing the duties on certain manufactures of iron and steel, including girders, angles, &c. Stevens of Massachusetts has in a bill reducing or repealing the duty on iron ore, scrap and manufactures of iron and pig. This provides for a sweeping reduction by general provisions. Bryan of Nebraska and Enloe of Tennessee have in bills making barbed and other wire for

fencing free; Stone of Massachusetts, a bill for free copper; Watson of Georgia, a bill for free iron ties, &c.; Blanchard of Louisiana for free iron and wire rods, and Andrews of Massachusetts, free coal, iron, &c.

None of these bills will pass. When the Fifty-third Congress comes together the revision of the metal schedule will be the theme of reams of parliamentary literature in bill form, and in some form a reduction is practically certain. The Western representatives favor a horizontal cut of 50 per cent. on iron and all other manufactures.

The time when whatever is to be done will commence will depend upon an extra or the regular session. The talk of members is for an extra session. The few men on the inside are opposed to one, as is the prospective President. They claim that they will find a way to compass the preliminary stages of tariff reform without an extra session.

The conference being held in New York between ex-Secretary Whitney, Speaker Crisp and one or two others will determine what will happen in the immediate future after March 4, 1893.

As the closing session of the Fifty-second Congress will assemble on next Monday, the members of both Houses are beginning to arrive in the city. The re-elected ones are full of notions of future legislation, and those prospectively *functus officio* are not so much interested in Congressional business as they were a year ago. So revolves the wheel of political fortune as far as its effect on legislation is concerned.

The high smoke-stack problem still holds fire in the office of Secretary Tracy, where it has been in that shape for some weeks. Engineer-in-Chief Melville is still firmly convinced that the extra 10 feet in height will be a vast improvement, but the Secretary has not yet been able to bring himself to the change. It was understood several days ago that the Secretary would now dispose of the matter at once. His delay is regarded as very significant. The Secretary and Chief Melville after a full discussion may reconcile their difference of views. The letter of Chief Melville setting forth his views is regarded by the Secretary as a very able document and a very comprehensive presentation of Mr. Melville's position.

It is intimated that the secret of the delay of the Secretary is the adverse pressure from other expert sources. The Engineering Bureau has completed the designs of the last of the engines for the new ships which have been ordered by Congress.

The experts are now working up new designs which may be applied to the engines of the ships of the future. At the present time American marine engineers are in advance of all competitors.

In the Fifty-third Congress the interests of the navy will not be overlooked. The present improvements were inaugurated by Secretary Whitney, who "will urge upon his party friends in Congress to permit them to go on."

In the criminal courts at Pittsburgh last week, in the case of Sylvester Critchlow, on trial on the charge of murder, preferred by F. T. F. Lovejoy of the Carnegie Steel Company, Limited, the jury returned a verdict of not guilty. This was one of the famous Homestead cases and the verdict rendered was a surprise to those posted on the merits of the case, as it was thought the evidence against the defendant was sufficient to insure a conviction. It is the impression that the verdict rendered in this case will have a material effect on the other cases to come to trial, and it is reported there is a possibility of the balance

of the cases against the Homestead rioters and also against the Carnegie officials being dropped entirely.

The Rew Gas Process.

The apparatus of Henry C. Rew for converting bituminous coal into gas by the water-gas process has been put into successful operation by the National Gas & Water Company of Chicago, at the works of the Gas Light & Coke Company of Mattoon, Ill. The works there are hardly a "show" plant, for the reason that the purifiers and holders are too small to allow of the running of the apparatus to its full capacity. The company are now building for the second plant (and for World's Fair Exhibition), a larger works in Cicero, adjoining Chicago, and are laying 25 miles of mains in Oak Park, Austin and Ridgeland.

The following are the principal points of the Rew process:

Bituminous coal, located in internally fired, inclined coking chambers, is completely coked in about half an hour by direct internal combustion. The coking chambers are located between (and are in free and open communication with) generators containing incandescent coke on the one hand and red-hot regenerators on the other, and the radiation of heat from these chambers and free circulation of hot gases also aid in quickly coking the coal. The coke produced in the coking chambers is immediately utilized in the generators directly connected therewith for making water gas.

The primary products of combustion generated while heating up the apparatus preparatory to making illuminating gas are burned while hot by the admission of an additional air supply, and the heat thereby generated is stored in regenerators. All the heat not so stored in the regenerators is stored in condensers and water heaters, and the hot water is sent to the boilers, which thus require less fuel for generating steam.

The apparatus is operated by the alternate admission of air while heating up and of steam while making gas. The alternate pressure of air and steam is offset by a continuous exhaust. The gauges stand at or near zero, both the products and gases being drawn away as rapidly as they are generated.

Illuminating gas is made, consisting of carbonic oxide, hydrogen and illuminants, or the oxygen and hydrogen of steam, loaded with all the carbon and hydrocarbon vapors that they will carry. The heat stored in the regenerators is utilized for superheating steam on one side and for vaporizing oil and fixing the enriched water gas on the other. The steam is first highly heated and then passed down through one bed of incandescent coke and up through another, thus providing for its decomposition and avoiding the putting out of the fires at the base. The fires are cleaned and the ashes are withdrawn and fresh fuel supplied without loss of time, gas or heat. The coal is fed through tight-feeding apparatus. After so feeding the fresh fuel and cleaning the fires, the apparatus is quickly ready for a run of gas. The final burned products, generated while heating up, consisting of carbonic acid, nitrogen, sulphurous acid and ammonia, can be stored in holders if desired.

Immigration into the United States has fallen off owing to the refusal of the steamship lines to transport steerage passengers during the prevalence of cholera in Europe and the stringent quarantine at American ports. The total landed at the principal ports in October was only 16,428, against 54,182 for the same month of the previous year.

The Year's Naval Progress.

As is well known, the annual report of the Bureau of Naval Intelligence contains not only a summary of the progress in naval matters in our own country, but also in foreign countries. The last issue by this bureau shows that England still outstrips all other powers in the extent of its naval strength so far as regards the number of its ships afloat and those in course of construction. During this year and the next England will have completed ten vessels now under construction; 20 will be advanced sufficiently to be completed in 1894; two ironclads will be commenced in the dockyards and one by contract; ten first-class torpedo boats will also be commenced. Besides this formidable array there will be five ironclads finished and two sufficiently advanced to be finished in a year or two.

All of these ships are independent of the contract-built ships, nine of which will be completed after delivery this year and 15 will be materially advanced. During the year England's naval strength was augmented by the addition of four battle ships, five armored cruisers, four second-class cruisers and three torpedo boats. A small colonial dispatch boat was also added to her fleet. All of these ships are armed with the most approved guns, and many of them are leviathans in size and strength.

An interesting account is given in the publication of the battle ship "Royal Sovereign," one of eight ships of her class now under construction, which will surpass in size and power any previously constructed for the British Navy. On her trial trip this summer, under a boiler pressure of 150.3 pounds, air pressure 0.39 inches, and an indicated horse-power of 9644, she developed 16.31 knots. The weight and stiffness of the ship prevented any vibrations, and her steadiness was remarkable. Her draft was 28 feet aft.

France has also added materially to her fighting power afloat. In considering the plans for new ships, the endeavor has been to augment as much as possible the rapidity of heavy-gun fire, all progress in this direction being in addition to the offensive power, to assure greater protection to *personnel* against shells loaded with powerful explosives, the use of which is becoming general, and to place on the ships the greatest possible number of rapid-fire guns in order to establish the superiority of this fire at the beginning of the combat. In pursuance of her policy she proposes to lay down the following ships during the next year: Two battle ships of 12,000 tons displacement, one first-class protected cruiser, one third-class, two ordinary cruisers, one torpedo ship and ten first-class torpedo boats. The first two named ships are to cost \$5,475,000 each and the first-class protected cruiser \$2,149,200.

The year's record of ordnance material shows the continued failure of monster guns afloat and the recognized increased efficiency of reduced calibers and weights of guns composing the main batteries of vessels. In endeavoring to secure the most powerful weapon afloat, the monster 110-ton guns have proved failures in England, or, as an officer of the Royal Navy terms them, "abnormal growths of peace, which the rough tests of war will sweep away." That this is tacitly admitted in England is shown by the fact that no new guns of that type have been contracted for, and that the majority of the large guns made lately were 13.5-inch 67 ton rifles. Italy has been confining herself to 68 ton guns.

During the past year the chief investigations of the development of armor for naval use have been confined to experiments in England and in the United States. The experiments made in this country showed beyond a doubt the su-

periority of a nickel-steel plate, properly treated and face-hardened by the Harvey process, over a compound plate. Trials at Indian Head are shown by the book to prove conclusively the value of employing an alloy of nickel in steel, and, also, that when the Harvey process is properly employed, it is capable of increasing the efficiency of nickel-steel armor to a wonderful degree of perfection.

Sigua Ore.

The American whaleback steamship "Joseph L. Colby" was the first vessel to bring a cargo of ore to Philadelphia from Sigua, Cuba, for the Sigua Iron Company. Sample of this was taken by Andrew S. McCreath of Harrisburg, Pa., who reported analysis as follows:

Metallic iron.....	65.850
Copper.....	0.008
Sulphur.....	0.037
Phosphorus.....	0.015
Alumina.....	0.801
Lime.....	0.260
Magnesia.....	0.172
Silica.....	3.530

An analysis made by the furnace receiving this cargo made from their own sample showed:

Metallic iron.....	66.61
Phosphorus.....	0.010

A portion of the same cargo also went to the Midvale Steel Company, who report the following as their analysis:

Metallic iron.....	67.576
Phosphorus.....	0.014
Sulphur.....	0.026
Alumina.....	0.709
Lime.....	0.620
Silica.....	1.400
Magnesia.....	0.111

The second cargo of 2400 tons was brought by the English steamship "Torgorm," which arrived here November 17; sample taken and analyzed by Prof. Andrew S. McCreath of Harrisburg, Pa., showed the following:

Metallic iron.....	63.350
Phosphorus.....	0.014

Other cargoes will follow the above at regular intervals.

In regard to the port of Sigua itself, the following letters need no explanation:

From the time of our arrival off the pier at Sigua until we were alongside ready to receive ore was just 11 minutes, and the actual time in loading the ore was not over one hour. I am thoroughly familiar with the ore-loading ports of Lake Superior, and do not hesitate to say that your pier at Sigua is as good as any that I have seen in any part of the world, the ore pockets of the pier emptying themselves readily and no difficulties presenting themselves in any way with the working of the shutes or the loading of the vessel.

In regard to the harbor of Sigua, I took occasion while loading cargo to take some soundings alongside the pier and in other parts of the harbor, and found a uniform depth of from 27 to 30 feet. I found no difficulty whatever in taking my ship into her loading berth, nor in coming out of the harbor, and can recommend Sigua as one of the best iron ore shipping points that I ever loaded at, being sheltered from winds from the north by the Sierra Maestra range of mountains, and from the prevailing southeast winds by the stone breakwater, as well as the iron pier itself. A strong south to southwest wind is the only wind that could interfere in any way with a ship loading at the pier, and that could be overcome by a short spur of breakwater being built from the west shore, and I might add that this wind would be an unusual occurrence in those latitudes, the prevailing trade wind being almost uniformly from the southeast, from which the harbor is perfectly sheltered.

This letter is signed by Ransford D. Bucknam, Commodore of American Steel Barge Company of New York.

The following is a letter from the master of the "Torgorm":

From the time of my arrival at your pier until my ship was moored alongside was just ten minutes. I consider Sigua a perfectly safe harbor of very easy access, where iron ore can be loaded with the greatest facility and dispatch. No pilot is required to take the vessel alongside the pier; the port charges are exceedingly light, and other expenses, such as

provisions, &c., can be had at a very low cost. A steamer lying alongside the pier is in position to leave at a moment's notice day or night. There are no shoals, reefs or bar in the harbor, and I would not hesitate to recommend Sigua as a perfectly safe harbor for ocean-going ships in every particular. I estimate that a vessel requiring 3000 tons could be loaded at your pier inside of six hours.

Phosphor Tin.

Crescent Phosphorized Metal Company have purchased property at 2107-2111 Indiana avenue, Philadelphia, where they have erected smelting works for the production of phosphor tin by a process of their own. The makers state that their alloy is guaranteed to contain 7 per cent. of phosphorus, and that by simple amalgamation of the same with pure copper, according to their formula, a high grade of phosphor bronze is produced, which is peculiarly suitable for use by locomotive and engine builders, steam fitters, machine shops, brass founders, &c., making superior fittings at a less cost than in the case with any amalgam now used. The company issue the following instructions for using their metal:

Formulas and instructions for producing a high-grade phosphor bronze with the Crescent brand phosphor tin charged with 7 per cent. phosphorus:

No.	Class of work.	Copper.	Lead.	Phosphor tin.
1.	Hydraulic work, piston rings, &c.	90	..	10
2.	Heavy bearings, locomotive axles and slide valves	80	10	10
3.	Powder mill machinery	90	..	10
4.	Tooth wheels, pinions, &c.	88	..	12

In making phosphor bronze from phosphor tin alloy, the following application must be adhered to: Melt the copper into a fluid state (and where lead is used) deposit before withdrawing from furnace; break and mix the tin after the crucible is withdrawn from the furnace. Stir rapidly and allow action to cease. By following these instructions you will complete the amalgamation and thus insure perfect solidity. The metal is exceedingly fluid when melted, and must not be poured too hot and also poured in as large a stream as possible.

It is claimed that by substituting 2 per cent. of phosphor tin with copper, instead of ordinary tin, as is usually done, a perfectly pure and fluid metal is produced, which is invaluable where light and difficult castings are desired. The company's production has been adopted by the Pennsylvania Railroad Company, Pullman Palace Car Company and numerous other corporations. The capacity of the new works is 12 tons of phosphor tin daily. Manganese bronze and phosphorized babbit metal are also made; and works are now being built, as an addition to the company's plant, for the production of stick phosphorus for the trade, which will yield a daily output of about 2500 pounds of this material.

Gold Exports.

The resumption of gold exports at this season of the year is a factor worthy of more than a passing notice. During the past three weeks sterling exchange has been creeping dangerously near the exporting point, and serious apprehensions have been entertained that the advance could only be checked by gold shipments. It led last Saturday in the shipment of \$600,000 to France. This engagement must have been without profit, as it was made at \$4 88. Since then exchange has advanced to \$4.88 ⁵/₁₆, which is within ¹/₁₆ of the price at which eagles can be exported to London. Leading exporters say that a shipment on Saturday's steamers is almost certain.

The causes are somewhat problematical. There is no doubt that a speculative influ-

ence has been operative in the form of short exchange. Just at the present time this is said to be heavy and that strenuous efforts are being made to cover. Then again there is a shortage of commercial bills, notably cotton bills, in this center, due in a large measure to the curtailed operations of the Manchester spinners.

The following table shows the history of the exchange market for nine years:

	Balance of trade of June 30.	Movement of gold.	Sterling exchange on demand Nov. 1.
1883..	\$100,658,488*	\$16,007,191 import.	4.85
1884..	72,815,916*	12,990,598 export.	4.84
1885..	164,062,420*	12,225,104 import.	4.86
1886..	44,088,694*	25,959 import.	4.85
1887..	23,863,443*	35,744,872 import.	4.86
1888..	28,002,607*	23,465,674 export.	4.88
1889..	2,730,277*	38,928,828 export.	4.86
1890..	68,518,275*	3,819,007 export.	4.86
1891..	39,504,614*	43,964,607 export.	4.85
1892*.	74,158,890*	51,750,369 export.	4.85

* Ten months.

+ Excess exports.

* Excess imports.

Thus it will be seen that our balance of trade for the year ending June 30 was the heaviest of any year since 1885, while in ten months, to November 1, we have exported more gold by \$11,000,000 than in any previous year. Likewise, in the year previous, heavy exports were coupled with a large trade balance. A year ago there was prevalent a belief that the heavy exports were in the form of loans, and that it would surely return. The figures of 1892 do not bear out this belief. On the contrary, they prove that we are simply paying our debts. These are not debts for goods, as we have \$74,000,000 to our credit on this account. They, then, must have been created by a sale of our securities. This is undoubtedly a fact. Since the Baring failure Europe unloaded millions upon millions of our stocks and bonds. At first it was because she was in need of money. Now money is plenty in Europe, but still the distrust of our institutions continues. The financial world can attribute it to no other cause than the Sherman silver law, which, backed by the credit of the United States, adds 54,000,000 ounces of silver yearly to the money of the world.

Undoubtedly the first remedy must be sought in a repeal of the law. This done European confidence will be restored and the return of investment capital to this country chronicled.

At a meeting of the former strikers of the Beaver Falls mills of the Carnegie Steel Company, Limited, at Beaver Falls, Pa., held last week a circular was issued, an extract of which reads as follows: "Assistant roller reduced from \$9 to \$6.40 per day; engineer on No. 1 engine, reduced from \$2.64 to \$2.25 per day; water tenders, reduced from \$2.50 to \$2.25; firemen, reduced from \$2.10 to \$1.80; engineer on big engine, reduced from \$2.85 to \$2.75; his helper reduced 15 cents a day. The heaters have to work three furnaces for 27 cents, where they should receive 36 cents per ton. These are facts susceptible of proof, and there should be no statements made that are not based on facts. To all our friends who have stood by us we return our earnest thanks. To those who have tried to defeat us, and who have succeeded in doing it, we say we want no apologies, and we want them to glory in their victory."

In the United States Circuit Court at Pittsburgh on Monday the equity suit of the Union Switch and Signal Company against the Johnson Steel Street Railway Company of Johnstown, Pa., was up for argument. The suit is to determine the ownership in this country of the patent which is so well known as the Sykes system of railway signals.

TRADE REPORT.

Under the leadership of some of the Southern Iron companies, an effort is being made to push sales. The result is a weaker tendency in the principal market for their product, Cincinnati, reflected by a lowering in quotations in Chicago and New York. Thus far these attempts have not led to the marketing of any large lines of Pig Iron, but prices are quotably lower, the decline amounting to about 25¢ a ton. The reappearance of the sellers at so early a time after the movement to secure an advance is not regarded as an encouraging sign.

Bessemer Pig is quiet in the Pittsburgh market, with intimations of weakness. There is a report that one of the Pittsburgh mills has contracted for a large quantity of Bessemer Pig at a very low price.

The Billet market has remained in much the same condition which has characterized it lately. The reports of low prices for early delivery are being confirmed, and has had its effect upon the Chicago and the Eastern markets. It is reported that several of the mills of the Pittsburgh and Wheeling districts will soon close down for extended repairs.

Our English correspondent cables that the Glengarnock Company have made liberal sales of Steel Tin-Plate Bars for American delivery.

Wire Rods are weaker in Pittsburgh. An inquiry for 12,000 tons at competitive figures was declined by Chicago mills.

Muck Bars have weakened both in eastern and western Pennsylvania. Skelp is active in Philadelphia, but at very low prices.

The meeting of the Steel Rail makers in this city yesterday did not lead to any changes in the market. Dullness is still the prominent feature of this important branch of the trade, with little present prospect of a change.

Chicago is the only market which reports the closing of any large cut rates for structural material. Two additional large buildings will be soon taken there and early in December bids are to be opened for about 5000 tons of elevated railroad work.

Plates are dull. Bars are weaker, and Merchant Steel Bars and other shapes are selling at low prices, with the market in favor of the buyer. The lower numbers of Sheet Iron are developing a drooping tendency in the Philadelphia market, and in Chicago Sheets and Galvanized Iron are showing the effects of the approaching period of stock taking.

Copper is undoubtedly stronger, and it is now conceded that earlier in the month considerable contracts for Wire Bars were closed. Still the starting of work at the Anaconda would quickly put a damper on the market. Lead and Spelter are drooping steadily, lower prices being accepted nearly every week. Tin Plates are quiet.

Philadelphia.

Office of The Iron Age, 220 South Fourth St.
PHILADELPHIA, Pa., November 29, 1892.

The last month of the year brings the trade face to face with a condition of affairs almost totally unexpected, and yet the position is by no means discouraging. On all sides we hear that business has been larger than usual, and in the majority of cases there is no cessation of activity. But there is a disposition to grumble at something all the time, and this time it is the election. The most confirmed pessimists will admit that they have been very well employed during most of the year, and while profits have been small, there has been some margin all the way through. They will even admit that they are still busy, and that prices are about as high as they have been at any time during the year, but this election! how it is going to smash things! Perhaps it is, and if croaking will bring it about, why things are going to be smashed, and that is all there is to it. Buying has been checked undoubtedly, but that is no very serious matter—the real question is in regard to consumption. If consumption keeps up buying will certainly not run in the other direction, although the buyer who might have taken 1000 tons in one lot, may now take it in 100 or 200 ton lots, but the result will be just the same in the long run. Of course it is possible that the evil feared may come upon us, but the point we wish to make is, that there are no immediate signs of calamity, but the reverse. Business has been good, it is good now, and it looks as though it would continue good until some new element intervenes to change the course of events. There are several perplexing problems to be solved in the near future, however, so that the conservatism which is now so general is not to be wondered at. The financial situation is one feature of uncertainty; the question of gold shipments and of silver coinage and circulation suggest possibilities of complications in another direction, which, with the possibility of tariff tinkering, is not conducive to absolute confidence. Business men recognize these contingencies, however, and, while keeping a sharp lookout for danger signals, they see that there is plenty of business in the meantime and that prices are so low that serious shrinkage on values is so improbable as to be hardly worth consideration at all. For these and other reasons the position may be summarized as follows: Plenty of work for the balance of the year, deliveries a little slower than buyers wish them to be, and prices firm at about the same figures as during October. In regard to next year's deliveries, there is comparatively little demand, first, because buyers think they ought to get in at lower figures, and, second, because sellers don't see the necessity for any such concession as buyers would probably insist upon if there were any signs of weakening on the part of holders. They might and probably would shade a little, but there is no reason to believe that buyers are ready to do anything beyond just testing the temper of the market, and it must be conceded that they are puzzled and mystified by the unusual firmness with which all inquiries for prices are met. It may be a question of endurance, but for the time being sellers appear to have excellent control. Perhaps December may develop something to turn the tide, but in the general market buyers certainly secured no advantages during November.

Pig Iron.—The market shows a degree of strength which is surprising, even to those who have all along held that the situation was favorable to holders. In the face of the change in sentiment since the election, and a rigid determination not to buy, prices have serenely held their

own and now threaten to move upward. This feature of the market is another illustration of how little any one seems to know in regard to what may be in store for the near future. It may be figured out with apparent clearness that the market can go only one way under certain contingencies; and behold, the contingency arises and the market goes just the opposite. If this proves anything, it proves that the country is bigger and is growing bigger than the people that are in it. Certainly no one—not even the prophet Benner—has fully realized the enormous resources and capacity of this vast country. With an amount of Iron on hand of apparently crushing proportions until recently, and with a current production of probably 9,000,000 tons of Pig metal, and with a supposed adverse administration of government pending, buying is checked, yet stocks silently melt away, production increases and prices stiffen. This is the situation to-day, at all events, and as it has not been a good year for prophets, it may be well to postpone efforts in that line "until something happens." Prices are quoted about as follows for seaboard deliveries, and 25¢ @ 40¢ less for Southern brands delivered at points 50 to 100 miles south or west:

American Scotch, No. 1x.....	\$17.00	@	\$17.50
American Scotch, No. 2x.....	16.00	@	16.50
Standard Penna. (Lake Ore), No. 1x.....	15.25	@	15.75
Standard Penna. (Lake Ore), No. 2x.....	14.50	@	14.75
Standard Penna. (Lake Ore), No. 2 plain.....	13.50	@	13.75
Medium Quality, No. 1x.....	14.50	@	14.75
Medium Quality, No. 2x.....	14.00	@	14.25
Standard Virginia, No. 1x.....	14.75	@	15.00
Standard Virginia, No. 2x.....	14.00	@	14.50
Virginia and Southern, No. 1x.....	@	14.50
Soft.....	@	13.75
Standard Penna. and Virginia Forge.....	13.25	@	13.50
Ordinary Forge.....	12.75	@	13.00

Bessemer and Low Phosphorus Pig.—The market has a strong undertone and sales are easily made at about \$16 at furnace for Bessemer and \$17.75 @ \$18 for Low Phosphorus. Several good sized lots have been taken at about these figures, and more would have been taken if there were stocks to draw from.

Steel Billets.—There is more or less irregularity in quotations, but very little change as regards actual selling prices. One day a very high price may be quoted for a spot lot, another day a very low price for 1893 delivery, but when it comes to actual business \$26.50 @ \$27 for such quantities as buyers may happen to need for quick delivery appear to be the only real test of what the market really is. Buyers are not prepared to pay quoted rates for anything later than December, and as sellers are not willing to take less, business is practically at a standstill. Some people think that a lower range of prices is inevitable, but somehow or other theories of this kind have not worked out right of late, and as holders show no disposition to lower their prices, it is an open question yet whether they or buyers will be the first to make a concession. Quotations for January, February and March about \$25.50; December, \$26.50 @ \$27 delivered, Schuylkill Valley or equivalent points.

Muck Bars.—Market fairly active but lower. Sales have been made at \$25.25 @ \$25.50 delivered, but on firm offers for good sized lots these figures could be easily shaded. Nominal quotations to-day are \$25 @ \$25.25.

Bars.—The market is a little quiet, and at the moment there is not much new business in sight, although the run of small day-to-day orders seems to keep mills pretty well employed. Prices are fairly steady, and as raw material is costing more money, there is not much room for lower figures on the finished article. Prices for city deliveries of best Refined Bars are

nominally from 1.70¢ @ 1.75¢ and 1.60¢ @ 1.65¢ at interior points, but on large orders it is not difficult to secure a liberal concession.

Skelp.—A very good business is reported, but at extremely low figures. Buyers try to get in at less than 1.60¢, for Grooved, but sellers seem to consider this figure a minimum, 1.62½¢ being the usual asking price.

Plates.—A considerable amount of business is being done in this department, and as a rule at steady prices, although in exceptional cases some pretty low figures have been named. Work is by no means scarce, however, and until it becomes more so than it now is it is not likely that prices will recede from their present level—which is quite low enough considering the cost of production. Orders have been of a well-assorted character, not specially large from any single interest, but in the aggregate the volume of business is quite important. There is a good deal of business pending, and the chances for it being placed appear to be favorable, but the situation is not as settled as could be desired, so that prices are subject to more or less depression, unless the market receives support from an early distribution of new business. Meanwhile prices are nominally about as follows, delivered:

	Iron.	Steel.
Tank Plates.....	1.85 @ 1.90¢	1.85 @ 1.95¢
Shell.....	2.20 @ 2.30¢	2.20 @ 2.30¢
Flange.....	2.70 @ 2.90¢	2.50 @ 2.60¢
Fire Box.....	3.00 @ 4.00¢	2.70 @ 2.80¢
Special qualities.....		3.25 @ 3.75¢

Structural Material.—There is very little change to note in this department, but as mills have already a large amount of work in hand, a temporary slackness in demand makes very little difference. There is a pretty good run of small orders, however, and quite a good deal of inquiry for prices on large lots, so that, taking everything into consideration, there is no cause for complaints. Prices are a shade easier in some directions, but as a rule quotations are usually given about as follows: Angles or Sheared Plates, 1.85¢ @ 1.95¢, delivered; Universals, 1.95¢ @ 2¢, and Beams, Channels or Tees, 2.20¢ @ 2.30¢.

Sheets.—Some weakness is reported in quotations on Thick Sheets, but Light Sheets are very scarce and, therefore, command pretty full prices. For best makes quotations are about as follows:

Best Refined, Nos. 14 to 20.....	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24.....	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 28.....	3.15¢ @ 3.20¢
Best Refined, No. 27.....	3.30¢ @ 3.40¢
Best Refined, No. 28.....	3.40¢ @ 3.50¢
Common, ¼¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 16.....	2½¢ @ 2½¢
Best Soft Steel, Nos. 18 to 20.....	3¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 25 to 28.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28.....	3½¢ @ 4¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount....	@ 70 %
Common, discount.....	@ 72½ %

Old Material.—The market is not in very good shape, and to effect sales holders are asked to make quite important reductions. This has not been granted to any extent, although buyers hold off, hoping they may yet secure some concession from quoted rates, which are about as follows: Old Iron Rails, \$18 @ \$19, delivered; Old Street Rails, \$19 @ \$20; Old Steel Rails, \$15 @ \$16; No. 1 Railroad Scrap, \$16 @ \$16.50; Philadelphia, or for deliveries at mills in the interior, \$16.50 @ \$17.50, according to distance and quality; \$8 @ \$9 for No. 2 Light; \$11 @ \$12 for Machinery Scrap; \$11 @ \$12 for Wrought Turnings; \$8 for Cast Borings, and nominally \$20 for Old Fish Plates, and \$13 @ \$14 for Old Car Wheels.

Wrought-Iron Pipe.—Business is not active by any means, although there is a fair run of hand-to-mouth orders, with discounts quoted as follows, with the usual dealers' and jobbers' commission: Butt, Black, 55 %; Butt, Galvanized, 47½ %; Lap, Black, 65 %; Lap, Galvanized, 55 %; Boiler Tubes, 65 % all sizes new list; Casing, 62½ % new list.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, November 30, 1892.

There is a falling off in the volume of business and the outlook is regarded with considerable apprehension by members of nearly every branch of the Iron trade. Manufacturers of machinery report that their customers are asking to have deliveries postponed and expected contracts are being deferred to await a more favorable condition of affairs. A very decided change has taken place in the business aspect since the early part of November. Indications then favored an advance all along the line. Now the prospects seem to be exactly the reverse.

Pig Iron.—The past week has been dull. The only sales reported are of carload orders, with a very few larger lots taken by those who have work which they wish to cover. Consumers who had been negotiating for round lots of Coke Iron have decided to defer buying until after the first of the year. It is the general belief that prices will go lower rather than higher. This is foreshadowed by the action of some of the Southern companies, whose agents are now offering concessions in order to secure business. Some small lots of Lake Superior Charcoal have been sold at \$16.50, but inquiries are lacking for large orders. Quotations are as follows, cash f.o.b. Chicago:

Lake Superior Charcoal.....	\$16.50 @ \$17.00
Local Coke Foundry, No. 1.....	13.75 @ 14.25
Local Coke Foundry, No. 2.....	13.50 @ 14.00
Local Coke Foundry, No. 3.....	13.25 @ 13.75
Local Scotch.....	14.25 @ 14.75
Ohio Strong Softeners.....	16.25 @ 17.00
Southern Coke, No. 1.....	14.75 @ 15.25
Southern Coke, No. 2.....	13.60 @ 14.00
Southern Coke, No. 3.....	13.10 @ 13.25
Southern, No. 1, Soft.....	13.60 @ 14.00
Southern, No. 2, Soft.....	13.00 @ 13.25
Southern Gray Forge.....	12.85 @ 13.10
Southern Mottled.....	12.50 @ 12.75
Tennessee Charcoal, No. 1.....	16.50 @ 17.50
Alabama Car Wheel.....	19.50 @ 20.50
Coke Bessemer.....	14.50 @ 15.00
Hocking Valley, No. 1.....	17.00 @ 17.50
Jackson County Silvery.....	17.00 @ 17.50

Bars.—Manufacturers are favored with quite a steady trade in a small way, which keeps the market in a reasonably firm state. An inquiry is noted for a round lot of Bars for car work, to be delivered in March and April. Quotations range from 1.60¢ to 1.62½¢ to 1.65¢, Chicago, half extra, for mill lots. Soft Steel continues to be quoted at 1.70¢ @ 1.75¢, but there are indications of weakening on the part of some of the makers of this class of material, doubtless owing to the lower price now being named for Billets. Jobbers are not equally affected at present, some reporting a continued heavy trade from store, while others state that their orders are slacking up decidedly. Quotations for stock continue to be 1.80¢ @ 1.90¢ for Iron and 1.90¢ @ 2¢ for Soft Steel.

Structural Iron.—An order for 1500 tons of bridge material was the largest placed during the past week. Very heavy business is pending, among which is the public library contract, which will require about 2500 tons of Beams and Columns, and the Milwaukee Court House work, which will also take a large quantity of materials. Quite an active demand is reported for small lots of Beams for quick delivery, which has made business very good from stock. Mill lots of Beams are now quoted at 2.25¢ @ 2.35¢, Chicago,

and small lots sell at 2.45¢ @ 2.75¢ from stock. Angles and Sheared Plates are quoted at 1.90¢ @ 2¢, Chicago, for mill shipments. Universal Plates are selling at 2¢ @ 2.10¢ from mill.

Plates.—Jobbers are enjoying a good, steady trade and report prospects bright for a continuance of the demand from boiler makers and tank makers, who are now doing considerable repair work, with some sprinkling of new contracts. Competition for mill orders is brisk and prices are a little lower than they have been. Mill lots, Chicago delivery, are quoted as follows: Tank Steel, 2.05¢ @ 2.15¢; Shell Steel, 2.12½¢ @ 2.25¢; Flange Steel, 2.25¢ @ 2.40¢. Quotations from stock unchanged.

Sheets.—Black Sheets are moving less freely than last week, the demand being influenced by the approach of the inventory period. Prices have not declined as yet, but continue to be as follows, on Common Black Sheets, Chicago delivery: No. 24, 2.75¢; No. 26, 2.85¢; No. 27, 2.95¢; No. 28, 3.10¢; No. 32, 3.55¢. Good Soft Steel Sheets are selling at \$1 to \$2 per ton advance on these prices. Galvanized Iron is also feeling the effect of the season and orders are less numerous than they have been. Mill prices are nominally 70 and 7½ % discount for Juniata in carload lots or over. There is some disposition to shade these figures on good orders. Small lots are now selling at 70 % off from stock. Sheet Copper is in unusually good demand, but prices are unchanged at 30 % off.

Merchant Steel.—Open-Hearth Machinery and Spring Steel are not so firm as they have been, and carload orders can now be placed at 1.90¢ @ 2.15¢, Chicago delivery. Tire Steel is selling at 1.85¢ @ 2¢. Ordinary Tool Steel is unchanged at 6½¢ and upward, according to quality. The business of the past week has been confined almost exclusively to small lots.

Billets and Rods.—In sympathy with the Eastern market the price of Billets has declined here to \$25, and it is probable that a further concession of 25¢ would be made on regular 4 x 4 inch Wire Billets. A few sales have been made, but there are no large transactions to report. A sale of 1000 tons of Wire Rods has been made at \$33, buyer's mill, to a local consumer. Further business aggregating 12,000 tons was declined because the local mill did not care to compete with Eastern makers at the terms understood to have been named.

Rails and Track Supplies.—Nothing of moment has occurred in the Rail trade. The orders now being booked are quite small and nothing as yet is in sight for next year. Quotations are maintained at \$31 and upward, according to the size of the order. Iron and Steel Splice Bars are quoted as before, 1.75¢ @ 1.80¢. Track Bolts, with Hexagon Nuts, 2.65¢ @ 2.75¢. Spikes, 2.05¢ @ 2.10¢, Chicago, for mill lots.

Old Rails and Wheels.—The market for old Iron Rails is lower. The best price that could be obtained last week for a lot of 250 tons was \$18.50, Chicago. Old Steel Rails are quoted at \$13 @ \$14.50, with a very light demand. Old Car Wheels are very quiet and quotations are wholly nominal in the absence of transactions.

Scrap.—The burning of the rolling mill at Detroit last week cuts off another Scrap consumer in the Western market. The effect is felt in this territory indirectly, but still has its influence. Local consumers have for the past two or three weeks bought so little Wrought Scrap that prices are again off and we revise quotations accordingly. The demand for Cast Scrap is fairly good and dealers report only a limited stock on hand. Dealers quote No. 1 Railroad, \$16 @ \$16.50; No. 1 Forge, \$15 @ \$15.50; No. 1 Mill, \$11; Pipes and

Tubes, \$10; Horseshoes, \$16; Sheet Iron, \$6; Cast Borings, \$6.25; Wrought Turnings, \$9; Axle Turnings, \$9.50; Machinery Cast, \$11.50 @ \$12; Stove Plate, \$9; Malleable Cast, \$10; Car Axles, \$18.50 @ \$19; Fish Plates, \$17.25; Mixed Steel, gross ton, \$11; Coil Steel, \$15; Leaf Steel, \$16.50, and Tires, \$15.

Metals.—Lake Copper has advanced to 12½¢ for carload lots and 13¢ for small lots. Casting Copper is also up and is now quoted at 11¼¢ for carloads and 12¢ for small lots. The Copper market is very strong and there is every indication of prices going still higher. Spelter is dull with 4.25¢ asked for prime Western brands. Carload lots of Pig Lead have been sold at 3 62½¢ @ 3.67½¢. The largest producers are reported to be offering very little Lead, claiming to be sold fairly ahead.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, November 29, 1892.

While the situation is not discouraging by any means, it cannot be denied that the volume of business in November was not up to expectation by any means, and the entire situation, both in Finished and Raw materials can be summed up in the one word "quiet." Some in the trade attribute this condition of affairs to the result of the election, while others say that it has been brought about by the fact that buyers always go slow at the end of the year, and that this year is no exception. It is admitted on all sides that the consumption of materials of nearly every kind is enormous and constantly increasing, and this is put forth in support of the statement that the recent falling off in demand will prove to be only temporary. In connection with the curtailment in demand, prices on some lines have also weakened to some extent. Soft Steel has lost ground steadily for the past two weeks, Bessemer Iron and Muck Bars are halting, while Barb Wire and Wire Nails are lower than ever before in their history.

Pig Iron.—The week under review was without any special features, sales being confined exclusively to small lots, and transactions very limited in number. The regular monthly report showing condition of furnaces and stocks is being awaited here with considerable interest by the trade. Should the report of December 1 prove as favorable as that of November 1 it will, no doubt, have a very beneficial effect, as these reports are studied very closely by both buyer and seller. Production of Pig Iron in the Pittsburgh district has been curtailed to some extent by the blowing out of two of the Edgar Thomson stacks, both of which will be practically rebuilt, requiring about three months' time. No material change in the situation is expected to take place in the market during the balance of this year, as consumers will be anxious to clean up stocks as much as possible before making contracts for next year, and as a consequence of this buying for the next two or three weeks will likely be restricted to a considerable extent. City makers of Bessemer continue to report that they are well sold up and do not evince a disposition to shade prices to any considerable extent in order to secure business. On the other hand, buyers state that there is nothing in the situation to warrant higher prices in the near future, and are willing to delay placing contracts unless offered tempting figures. In Forge Iron a fair demand is going, with plenty available, on a basis of \$12.50, f.o.b. cars Pittsburgh, for best grades, with a probability of that price being shaded if a large block was involved. Nos. 1 and 2 Foundry Iron continue in about the same condition as noted for several weeks past.

While we do not quote Bessemer Iron below \$14, Pittsburgh, it is intimated that this price would be shaded under favorable conditions. We quote the market as follows:

Neutral Gray Forge.....	\$12.50 @	12.60, cash.
All-Ore Mill.....	12.50 @	12.75, "
No. 1 Foundry.....	14.00 @	14.25, "
No. 2 Foundry.....	13.00 @	13.25, "
Charcoal Foundry No. 1.....	19.00 @	19.50, "
Charcoal Foundry No. 2.....	19.50 @	20.00, "
Bessemer Iron.....	14.00 @	14.10, "

We note a sale of 1500 tons of Bessemer Iron on a basis of \$14, Pittsburgh, for December delivery, and one of 2000 tons for January and February delivery at the same price.

Muck Bars.—The softening of prices in Soft Steel has effected Muck Bars in the same direction, and prices are weaker at this time than for a number of weeks past. The demand has also fallen off considerably, mills substituting Soft Steel whenever it can be done. We quote No. 1 Muck Bars at \$24.50 @ \$24.75, and report a sale of 400 tons at the first named price, which can be considered the ruling quotation in this market.

Ferromanganese.—Only a fair demand is going, but prices are without change at \$62, f.o.b. at maker's mill. We note a sale of 100 tons at that price.

Structural Material.—The volume of business is not as large as some time ago, orders coming in now being confined principally to small lots for early shipment. With operations resumed in full at Homestead, the Carnegie Steel Company, Limited, can now be considered as producers of a full line of Structural Material, Rolling Beams up to 30 inches. Makers advise us that the demand this year has held up remarkably well, due no doubt to the very favorable weather for outside building operations, which has been experienced for some time past. Prices have undergone no material change since our report of last week, and we quote as follows: Beams and Channels from 2¢ to 2.10¢ for fair sized lots and 2.20¢ @ 2.25¢ for small lots. We quote Angles at 1.85¢ @ 2¢; Universal Mill Plates, 1.75¢ @ 1.85¢; Z Bars, 2¢ @ 2.05¢ and Tees, 2.25¢ @ 2.35¢.

Billets.—Principally by reason of increased production and also by reason of consumers requesting mills to delay shipments, the supply of December Billets has increased very materially, and, as a direct result, prices have declined to such an extent that there is very little difference between prices for balance of this year delivery and those for the first quarter of next year. One consumer advises us that he has been offered December Steel at a price equal to about \$23, f.o.b. cars Pittsburgh, but was unable to use it. A Wheeling concern is said to have offered 2000 tons for this year on a basis of \$23.75, Pittsburgh, but was unable to find a buyer at that price. As regards Billets for the first three or four months of next year, seller and buyer are getting closer, but the point of contact has not yet come. Thus far concessions have been wholly on the part of makers, but prices do not seem to have reached their level in the opinion of many buyers, and as a result few sales are being made. Last week \$23, Pittsburgh, was considered the ruling price, but it is safe to say that to-day that price would be shaded very considerably. It is evident that the advantage just now is with the buyer, and that low prices must prevail, for a time at least, in order to induce buyers to enter the market. It is reported that one large concern in this city and one in the Wheeling district will close down for an extended period at the first of the year in order to make extensive repairs and additions. If this report proves true it may materially change existing conditions.

Bars.—While the demand is slackening up to some extent, a fair run of orders continues to be received, which, with business booked some time ago, insures steady operations among the mills for balance of this year at least. Business being offered for next year is being eagerly sought, however, and as a result buyers are able to secure concessions over prices obtained for prompt material. Makers always look for a falling off in business at this season of the year, but an improved demand is expected when the holiday season is over. We quote No. 1 Bars at 1.62½¢ @ 1.70¢ and Old Rail and Scrap Bars at 1.55¢ @ 1.60¢. In the Mahoning Valley Bars are held firmly at 1.50¢.

Steel Rails.—There is nothing new to report at this time, Pittsburgh having retired from the field temporarily as a producer by reason of the Edgar Thomson plant going on Billets some time since. We understand that the old price of \$30, f.o.b. at mill, for Standard sections is still maintained.

Steel Plates.—With resumption of operations in full at Homestead, Pittsburgh will now be more largely than ever a producer of Steel Plates. We are advised that considerable business has been booked within the last few weeks, although complaints are still heard about competition keeping prices down to a very low level. We quote as follows: Bridge Plates, 2¢ @ 2.10¢; Flange, 2.10¢ @ 2.20¢; Fire-Box, 3.50¢ @ 3.75¢; Tank, 1.75¢ @ 2¢; Shell, 2¢ @ 2.25¢. It is said that in some instances these prices have been shaded slightly on desirable orders.

Skelp Iron.—A continued good demand for Skelp Iron is reported, brought about by the decided improvement in the Pipe and Tube business. Makers of Skelp Iron state that their trade for the past three or four months has been all they could desire as far as volume of business is concerned, but they would have been better pleased had prices been more favorable. Several of the largest Pipe and Tube mills in this vicinity continue to buy quite freely of Soft Steel to be used in place of Skelp Iron where customers specify that material in their orders. Prices are about the same as noted last week, and we quote average sizes of Grooved at 1.60¢ @ 1.65¢, and Sheared at 1.80¢ @ 1.82½, four months, or 2¢ off for cash.

Wrought-Iron Pipe.—A large volume of business is going, and makers advise us that the recent advances in prices are being firmly maintained. Several mills in this vicinity who participated in some recent large orders, as noted in these columns, can be considered as having their output practically sold up for some little time to come. The new list which went into effect on Wednesday, the 16th inst., is as follows: Black, butt-weld, 55 and 10%; Lap, 65 and 10%; Galvanized, butt-weld, 47½% and 10%; Lap 55 and 10%; Boiler Tubes, all sizes, 65%; Screw and Socket Casing, 62½%; Inserted Joint Casing, 57½%. It is understood that to the jobbing trade slightly better discounts than the above are allowed.

Merchant Steel.—While orders are not coming in as freely as some time ago, mills in this vicinity are busily employed in taking care of business previously booked. As noted in this report before, several concerns in this city would not be able to book additional contracts for early delivery for the reason that orders already booked will take almost their entire output for the next month or two. Prices continue about as quoted last week, as follows: Spring and Machinery Steel, 2¢ @ 2.10¢; Tire Steel, 1.90¢ @ 2¢; and Toe Calk, 2.25¢ @ 2.35¢; Tool Steel we quote from 6¢ upward.

Wire and Cut Nails.—The situation as regards the Wire Nail market has not

materially changed since our report of last week. A fair volume of business is going, but prices continue low and do not show any material prospect of advancing. The Beaver Falls Mills of the Carnegie Steel Company, Limited, are now in operation, with a reported output of 2500 kegs daily. It is understood, however, that this concern have their product well sold up for some time. We quote Wire Nails at \$1.50, in carload lots, Pittsburgh. This price continues to be shaded where large blocks are involved. In Cut Nails a fair demand is going, but as is the case with Wire Nails, prices are lower than ever known before, with the outlook for an advance not very promising. It is understood that for several large blocks recently offered some exceedingly low prices were named in order to capture the business. We quote Cut Nails on a basis of \$1.45, f.o.b. in Wheeling district, on a 30¢ average.

Wire Rods.—The market is quiet with no transactions of importance for some time past. This state of affairs is no doubt due to the unsatisfactory condition of the Wire market at this time, which naturally curtails the demand for Wire Rods. Prices have weakened to some extent recently, and we now quote at \$31 @ \$31.50, f.o.b. cars Pittsburgh. The first-named price can be considered the ruling quotation in this market. It is understood that several sales of Wire Rods made in this vicinity within a short time have been made at a figure slightly less than the lower quotation given above.

Barb Wire.—There is very little of interest to report at this time. A fair volume of business is going, but as the fall season is now over and the spring season has not arrived, makers naturally look for very light business for some time to come. There is no doubt, however, that the extremely low prices prevailing for some time past has resulted in a good many orders being placed at this time that would otherwise have been held over until next year. Makers agree that there can be no danger in placing orders for Wire for future delivery at present prices, which are lower than ever known before. We quote Painted Barb Wire at 2.05¢ @ 2.10¢ and Galvanized at 2.45¢ @ 2.50¢ in carload lots. Where large orders are involved these prices are shaded to some extent.

Sheets.—As noted last week, the volume of business is good, but prices are not as firm as they were some time ago. It is not believed, however, that there will be any further weakening, on account of the large amount of business going. We continue to quote No. 24 at 2.60¢, No. 27 at 2.70¢ and No. 28 at 2.80¢ in carload lots.

Scrap Iron and Steel.—The market is about in the same condition as noted in our report of last week. The supply of nearly all kinds of Scrap Iron and Steel seems to be largely in excess of the demand, and while this state of affairs continues no material improvement in prices can be expected. Much of the falling off in the demand for Scrap Iron is attributed to the fact that so many concerns are using Steel in place of Muck Bars. At one time Pittsburgh was the largest consumer of Scrap Iron of any city in this country, but the consumption of Scrap here is growing less right along. We quote No. 1 Railroad Wrought Scrap at \$14.75 @ \$15 gross ton. The demand for Cast Iron Borings continues good, and the recent advance in prices is maintained. We quote these at \$7.75 @ \$8.25 gross ton. Wrought Iron Turnings are also in fair demand and are bringing \$10.50 @ \$10.75 net ton; Leaf Springs we quote at \$21 gross ton and Coil Springs at \$18.50 @ \$19 gross ton; old Iron Axles continue very scarce and are readily bringing \$21.50 net ton.

Old Rails.—The shortage in supply of Steel Rails of short lengths noted last week continues, and we understand a sale was made last week on a basis of \$16 50, f.o.b. cars Pittsburgh. Long lengths we quote at \$15.75 @ \$16, and miscellaneous lengths at \$15.50 @ \$15.75. Old Iron Rails also continue very scarce, and we are advised of a sale of 100 tons made last week on a basis of \$21, f.o.b. cars Pittsburgh.

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fourth and Main Sts.,
CINCINNATI, November 30, 1892.

There is a very decided falling off in business in the Iron trade and the tone of the market is weaker in consequence, and if there is not any essential change in prices of Southern Irons, they are little better than nominal. One reason for this is undoubtedly the fact that the Northern furnaces are freely supplying the demand with similar grades of Iron at prices a little under what it would cost to lay down Southern Iron. This makes factors here willing to sell for almost any forward delivery at prices which they would be willing to accept for current delivery. The strong companies in the South still adhere tenaciously to their prices, but there is getting to be some accumulation of Pig Iron in Tennessee, which could be bought at concessions. For instance, Gray Forge is obtainable to a moderate extent at \$8.75 at the furnace, while the price is \$9, f.o.b. Birmingham. Business here has resolved itself into single carload lots and even these are scarce. Buyers in general seem disposed to keep near the shore and be ready for any emergency. The difficulty in obtaining cars to transport Iron for delivery on previous contracts still continues, and if curses on this account are not loud they are deep. All kinds of Iron are dull and neglected. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....	\$13.75 @ \$14.00
Southern Coke, No. 2.....	12.50 @ 12.75
Southern Coke, No. 3.....	12.00 @ 12.25
Ohio Soft Stone Coal, No. 1.....	16.00 @ 16.50
Ohio Soft Stone Coal, No. 2.....	15.00 @ 15.50
Mahoning and Shenango Valley.....	15.75 @ 16.75
Hanging Rock Charcoal, No. 1.....	19.15 @ 19.50
Hanging Rock Charcoal, No. 2.....	18.00 @ 19.00
Tennessee and Alabama Charcoal, No. 1.....	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2.....	15.50 @ 16.00

Forge.

Gray Forge	11.50 @ 11.75
Mottled Neutral Coke.....	11.25 @ 11.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	18.75 @ 19.00
Lake Superior Car Wheel and Malleable.....	17.75 @ 18.00

St. Louis.

Office of The Iron Age,
Bank of Commerce Building,
ST. LOUIS, November 28, 1892.

Pig Iron.—The market continues in much the same condition as last noted. Sales are light, but there is an undertone of strength to the market which serves to maintain prices as quoted below. Large consumers have filled their wants for the balance of the year, and are consequently out of the market. A feature of the market which will need careful watching is the matter of production, which shows a gradual but steady increase. This increase comes at a very inopportune period, as between now and February 1 trade is usually restricted, and any decided increase is pretty sure to affect the prices adversely. At the moment prices are well maintained, and those who anticipate a lower range within the next few weeks will likely be disappointed. After the turn of the year, with conditions prevailing as above outlined, things may be different. Sales during the week under review were made

at about the following prices, which are for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry,	\$14.25 @	\$14.50
Southern Coke, No. 2 Foundry,	13.25 @	13.50
Southern Coke, No. 3 Foundry,	12.75 @	13.00
Gray Forge.....	12.25 @	12.50
Southern Charcoal, No. 1 Foundry.....	15.75 @	16.00
Southern Charcoal, No. 2 Foundry.....	15.50 @	15.75
Missouri Charcoal, No. 1 Foundry.....	14.50 @	14.75
Missouri Charcoal, No. 2 Foundry.....	14.00 @	14.25
Ohio Softeners.....	16.50 @	16.75

Bar Iron.—The market is in a mixed condition. Some mills report well-filled order books at full prices, while others maintain that they are unable to obtain any large amount of business, even by shading current quotations. Under these conditions prices are hard to quote. Nominally they are as follows: 1.60¢ @ \$1.62½¢ from mill, half extras, f.o.b. cars East St. Louis. Jobbers ask 1.70¢ @ 1.75¢ from store.

Barb Wire.—Business in this department shows a decided falling off, and prices are proportionately weaker. The consolidation of the St. Louis Wire Mill Company, Lambert & Bishop Wire Company, Braddock Wire Company, Baker Wire Company and Iowa Barb Wire Company will no doubt tend to strengthen the market. At the moment Painted is quoted at \$2 20 for lots from mill; Galvanized at \$2.65. Indications point to a large spring trade, and unless something unforeseen occurs higher prices will more than likely prevail when this demand sets in.

Wire Nails.—The demand for Wire Nails grows weaker, and prices fail to improve in consequence. The weather is such that outdoor work is practically suspended, and mills are gradually curtailing their output. Mills quote \$1.65, f.o.b. cars here, for ordinary quantities, and this price would perhaps be shaded on a large order.

(By Telegraph.)

Pig Lead.—This metal continues in a rut, and in the absence of any improvement in demand prices are a trifle weaker. Sales of several hundred tons have been made during the past few days on the basis of 3.50¢ @ 3.55¢, the latter figure prevailing in the majority of the transactions. There does not seem to be anything in the situation to warrant any early improvement. At the moment 3.50¢ @ 3.52½¢ is quoted for spot lots.

Spelter.—A peculiar condition is noted in this metal. Nominally, Spelter is worth 4.15¢ for delivery during the next 60 days, and yet no one can be found who will accept this figure. On the other hand, buyers at higher figures are equally scarce. A waiting market is the result, with the advantage in favor of the buyer. Statistically, the condition of Spelter is bad, and yet the metal cannot be bought at less than 4.15¢.

Cleveland.

CLEVELAND, OHIO, November 28, 1892.

Iron Ore.—The season of lake shipments is almost over. Only 18,000 tons of Lake Superior Ore were unloaded on the local docks during the past week, and the total for this week will not exceed 10,000 tons. A few boats between Escanaba and Lake Erie ports are still in commission but will not remain so for more than a week or ten days. A considerable quantity of Ore has been sold during the past few days, despite the interruption incidental to a holi-

day. Non-Bessemer at \$3 @ \$3.25 are still in fair demand, and good Bessemer Hematites are to be had at figures very close to \$4 per ton, f.o.b. vessels lower lake ports. We are also advised of a sale of non-Bessemer Specular and Magnetic Ore at \$4 per ton, lower lake delivery. The call for Ore from the furnaces is fairly well maintained, 30,000 tons having been sent forward during the past week as compared with 27,000 for the same week last year. Two cargoes of Ore from the new Mesaba mines have been received here, and experts are making a critical and painstaking analysis of it. The Ore was consigned to Oglebay, Norton Company, and was the first output from the new mountain range seen in this city. Estimates of the season's output vary from 7,900,000 to 8,250,000 tons. The exact totals will soon be known. In the meantime speculations regarding next season are going on, and it is reasonably certain that a fair share of the output of 1893 will have been contracted for before the navigation season of the coming year begins.

Pig Iron.—About the only feature of the market during the past week has been an advance in Foundry Irons and an improvement in the demand all along the line. Dealers report a number of inquiries for small amounts and a better outlook generally than for several weeks past. Buyers are watching the market closely, but can see little in the present outlook suggesting lower prices. An inquiry for Bessemer Iron sent to the Mahoning Valley to-day called out a reply that the material could be furnished at \$14, f.o.b. cars Cleveland. This certainly indicates a revival that both buyers and sellers will be quick to recognize. The following quotations are given out to-day:

Nos. 1 to 6 Lake Superior Charcoal	@ \$17.00
Nos. 1, 2 and 3 Bessemer, per ton	14.00	@ 14.25
No. 1 Strong Foundry, per ton	14.25	@ 14.50
No. 2 Strong Foundry, per ton	13.25	@ 13.50
No. 1 American Scotch, per ton	14.50	@ 14.75
No. 2 American Scotch, per ton	13.50	@ 13.75
No. 1 Soft Silvery, per ton	14.50	@ 15.00
Mahoning and Shenango Valley		
Neutral Mill Irons, per ton	12.50	@ 13.00
Mahoning and Shenango Valley		
Red Short Mills, per ton	13.00	@ 13.25

Nails.—The inquiry for Cut Nails is more pronounced, and quotations are firm at \$1.65 per keg in stock. Steel Wire Nails are not quite so firm at \$1.60 @ \$1.65 per keg. The demand for both Cut and Steel Wire Nails is, however, an improvement over recent conditions.

Old Rails.—The market is a bit more active, and prices may be a little firmer at \$19 @ \$19.50 per ton for Old Americans.

Scrap Iron.—Prices do not seem to improve, but the demand is better all along the line. Several small orders are reported at last week's quotations.

Barb Wire.—Manufacturers report a very good demand at unchanged prices.

Manufactured Iron.—The demand is fair for Common Bar at 1.60¢ @ 1.65¢, with brisk competition reported on every hand.

New York.

Office of *The Iron Age*, 96-102 Reade street,
NEW YORK, November 30 1892.

Pig Iron.—Under the efforts to place Iron the market has developed some weakness, which is attributed to local causes and to efforts to secure a foothold in this section. The scheme to secure control of about 100,000 tons of Southern Iron by large interests in this city has been abandoned for the present. We quote Northern brands at \$15 @ \$15.50 for No. 1; \$14 @ \$14.50 for No. 2; \$18 @ \$13.50 for Gray Forge, tide-water. Southern Iron, same delivery, \$14.75 @ \$15 for No. 1; \$13.75 @ \$14 for No. 2 and No. 1 Soft; \$13.25 @ \$13.50 for No. 2 Soft; \$12.75 @ \$13 for Gray Forge.

Ferromanganese.—The market is quiet, with quotations unchanged at \$60.50 @ \$61 for foreign Ferromanganese. No business in Spiegeleisen is reported.

Billets and Rods.—Buyers are holding off, while there is pressure to sell on the part of only a few sellers. The reports of low prices at Pittsburgh are confirmed, Common Wire Billets being offered at \$21.75. The freight rate from Pittsburgh and Wheeling to New York, within light-erage limits, has been lowered to \$2.70, so that Western Billets can be laid down at tidewater at \$24.50 for large blocks and \$25 for moderate quantities. Business in foreign Wire Rods has been done at \$40, which we quote, and there is reported to be in the market a lot of about 2000 tons for Pacific Coast delivery. There has been some movement in Swedish Rods at \$54.50 @ \$56, according to quality. We quote Foreign Billets \$29.50 @ \$30 nominally.

Steel Rails.—A meeting of the Rail manufacturers was held in this city on Tuesday, but nothing was done in regard to prices, which remain \$30 at Eastern mill. Business continues very light, no trunk line orders having come into the market as yet.

Manufactured Iron and Steel.—Current business is for small lots and for prompt delivery, there being no contracts of magnitude on the market for early settlement. Prices are weaker, there being increasing competition for work. This is true of Structural Steel and of Plates. Eastern mills do not take much interest in the letting of the contract, early in December, of 5000 tons of Elevated work in Chicago, because they do not believe it probable that they will be able to secure the work. We quote Beams at 2.35¢ @ 2.75¢ for small lots and 2.15¢ @ 2.50¢ for round lots, according to sizes; Angles, 1.85¢ @ 2¢; Sheared Plates, 1.85¢ @ 2.10¢; Tees, 2.20¢ @ 2.75¢; Channels, 2.20¢ @ 2.50¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.85¢ @ 2¢ for Tank; 2.20¢ @ 2.25¢ for Shell; 2.50¢ @ 2.65¢ for Flange; 2.6¢ @ 2.75¢ for Marine, and 2.70¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.67½¢ @ 1.9¢, on dock; Common, 1.55¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.90¢ @ 2.1¢, and Links and Pins, 2¢ @ 2.20¢; Steel Hoops, 1.90¢ @ 2¢, delivered.

Track Material.—We quote Spikes, 1.90¢ @ 2¢; Fish Plates, 1.60¢ @ 1.65¢; Track Bolts, square nuts, 2.40¢ @ 2.60¢, and hexagon nuts, 2.70¢ @ 2.80¢, delivered.

Warren Wood & Co. of 29 Broadway, have issued a circular in which they call attention to the brands of Pig Iron which they represent—viz., Haselton, Citico, Allegheny, Anniston, Rockwood, Carbon, Star, Martel, Rome and Jennifer.

Metal Market.

Copper.—While there is still some difference of opinion regarding the transactions in Lake Superior product referred to in last week's review, facts have come to the surface showing that good-sized contracts were placed during the first half of November, and that the quantity of Ingot and Wire Bars involved amounted to at least 6,000,000 pounds. Some reports have it that fully 10,000,000 pounds were placed during the month. For the past week nothing is reported outside of commonplace transactions; but the movement of prices has been toward a higher level, and, while speculative interests have not only exaggerated facts and discounted the future in certain ways, the plain fact remains that the market for Copper, here and in Europe, is more than superficially affected by the curtailment in the world's production that has taken place during the past five months. Numerous bids of 12¢ for

Lake Superior Ingot have been passed, while fair-sized lots realized 12½¢ and jobbing quantities 12¼¢. In speculative circles 12.15¢ was bid for December and January deliveries. Casting Copper has been sold to a very fair extent at 11½¢, and most producers are now asking ¼¢ advance on that price. Arizona Pig, of which sales were recently made at 10¢, is now quoted at 10½¢ upward, with the offering moderate.

Pig Tin.—There has been more or less energetic work in the direction of making matters unpleasant for dealers who did not have sufficient Tin in stock to deliver on speculative sales for November delivery; but the weight of heavy supplies here, coupled with London manipulations, has forced prices lower and given the market a feverish appearance. Against 20.35¢ bid a week ago, Straits has been sold at as low as 20¢ for December delivery and differed at relatively as easy prices for delivery further ahead. Apart from covering of "short" sales little if any speculative buying has taken place, however, and most operators seem still to fear manipulation at headquarters, although two prominent firms were reported to have purchased to a fair extent quietly during the latter portion of the week. Between 2300 and 2500 tons have arrived here during the past month, but the accumulation therefrom appears to be well taken care of through sales to out-of-town buyers at prices close to the official rates and the local purchasers above referred to. From the highest point reached during the autumn season "bull" campaign a reaction of nearly ¼¢ per pound has taken place. Since consumption keeps up well, this decline, in the opinion of some conservative observers, discounts about all the "bearish" features in sight at the present time. Wednesday's dealings on the Metal Exchange included 75 tons at 20.10¢ for December, 30 tons at 20.10¢ for January and 50 tons at 20.15¢ for February delivery. Thus higher prices were established here in the face of lower quotations from London. Not only that, but futures commanded a premium here although at a discount in the foreign market. Added to this peculiar condition of affairs is the fact that best bids here on spot stock were 19.95¢, against the purchases at 20.10¢ for December delivery. Altogether the appearances suggest a manipulated market.

Pig Lead.—The price has still further declined, without perceptibly increasing the movement of supplies into the channels of consumption. In the regular way, merely fair-sized lots went at 3¼¢, which rate subsequently became a common asking price, while the official bullion price receded to 3.70¢. There were vague rumors that purchases regular could be made at the last-named figures, were consumers disposed to take a large block. For the moment it looks as though the whole situation had narrowed down to a contest between producers and consumers, with the latter interest in a position to dictate.

Spelter.—Western brands have been sold at as low as 4½¢ delivered in the East, in carload lots, but the modified cost falls to prompt purchases of greater quantities than may be required to meet well-defined wants of consumers and jobbers. The offering is as reserved as circumstances will permit, but sufficiently urgent to distinctly reflect excessive production. Hence a depressed market and unenviable outlook for smelters.

Antimony.—Business in this line has been of routine character and the market continues soft without, however, any radical change in sellers' figures. Current quotations are 10½¢ for Hallet's, 10¼¢ @ 11¢ for L.X., 11¢ @ 11½¢ for Crown and 11½¢ for Cookson's in round lots.

Tin Plate.—For future deliveries orders have been smaller the past week and spot transactions have not exceeded ordinary bounds. While thus rather quiet, the market has remained steady in the absence of more urgent offerings of stock for shipment or on the spot. Stocks here are under fairly good control, with full weight Cokes and several lines of Terns still scarce. We quote spot prices as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., scarce; Bessemer full weight, scarce; light weights, \$5.15 for 100 lb, \$5.05 for 95-lb, \$4.90 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75; IX basis, \$6.80 @ \$6.85. IC Charcoals—Melyn grade, $\frac{1}{2}$ x assortment, \$6.40; Crosses, \$8; Allaway grade, any assortment, \$5.70; Crosses, \$7.10; Grange grade, any assortment, \$5.80; Crosses, \$7.20. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.40; M. F., 14 x 20, \$7.75; do., 20 x 28, \$15.75; Dean, 14 x 20, scarce; do., 20 x 28, \$10.80; D. R. D. grade, 14 x 20, \$5.35; do., 20 x 28, \$10.60; Alyn, 14 x 20, \$5.40; do., 20 x 28, \$10.65; Dyffryn, 14 x 20, \$5.65; do., 20 x 28, scarce. Wasters—S. T. P. grade, 14 x 20, \$5.10; do., 20 x 28, \$10; Abercarne grade, 14 x 20, \$5; do., 20 x 28, \$9.80.

Coal Market.

The condition of the Coal Trade in all branches is abnormal, owing to circumstances that are unusual if not unprecedented. While the Anthracite trade is fairly active and somewhat improved there is nothing like a boom, the market being well supplied except as to steam sizes. Pea and Buckwheat are scarce, the former selling at \$2.60 @ \$2.80 alongside; Buckwheat at \$2.10 alongside, in New York, or fancy brands, \$2.25. Broken sizes for steam or melting are more plenty. At the agents' meeting on Tuesday nothing was done. No advance of prices in December is possible or thought of. In the ordinary course of things October is the banner month. November shows a falling off. December is still worse, while in February operators look for liberal buying for the spring trade. Production for the week, 881,000 tons, a decrease of 122,000 tons compared with the same week last year, and since January 1 36,941,000 tons, an increase of 1,189,000 tons compared with last year. The Reading blockade is almost entirely relieved, side tracks having been cleared within a few days.

Bituminous Coal is scarce and dear. Shippers are all behind in their orders, some seriously, and scouring the market to pick up anything that can be found. Prices are irregular, Coal being in fact at a premium, but \$3 50 alongside is a fair quotation; more exactly Clearfield is \$3 @ \$3.25; Cumberland, \$3.25 @ \$3.50. With unusual scarcity there is an increased demand, with no prospects of speedy relief.

Coasting vessels at Philadelphia are suffering serious delay, because there is no Bituminous Coal in port to load them. Some of the vessels under charter have been two weeks awaiting their turn to load. Shippers say the whole trouble lies with the Pennsylvania Railroad Company, because of insufficient rolling stock. Trains of Coal belonging to private operators have been taken for fuel for the locomotives to enable them to reach their destinations.

The fire at Hazleton, which was supposed to have been extinguished in the Honey Brook Mine last week, has broken out afresh. The interior of the mine has been so wrecked that a total collapse is anticipated and workmen dare not enter it. The

vein is one of the richest in the region. Water is again being pumped into the mine.

Financial.

The heavy falling off of our exports of breadstuffs and cotton this autumn, at the same time that imports have been remarkably large, tends to unsettle the balance in foreign trade. The consequence is seen in the export of \$600,000 in gold during the past week, an occurrence which has not been witnessed before in November for many years. As it is not unlikely that existing conditions may continue indefinitely, speculation is rife concerning the probable effect of an outward flow of gold several weeks in advance of the usual time. With reference to the money supply financiers reason that a loss of gold should not cause stringency any more than should the export of any other commodity of which there is a surplus, the stock of money of all kinds having increased in this country during the last fiscal year \$150,000,000, as shown by the report of the United States Treasurer just issued. But in its bearing upon contemplated silver legislation the fact has special significance. For four months the excess of imports over exports exceeds \$27,000,000. In the London market the gold movements from New York are attributed partly to the continuous large sales of American securities on English account and partly to the absorption of gold by the Austro-Hungarian Bank, amounting thus far to \$20,000,000.

At the monetary conference in Brussels M. de Rothschild, the English delegate, proposed that Europe buy annually £5,000,000 of silver to keep up the price, and that silver be made a legal tender up to £5.

The acknowledgment thus implied that it is necessary to do something to check the decline in this metal at once became the subject of much discussion in Wall street.

The stock market was dull and weak, with the bears in control. Nearly all the stocks are lower than a week ago, but the declines are only fractional. The industries were notably strong. Thus, while the railroad list went toward a lower level, Distilling and Cattle Feeding, National Cordage, American Sugar and Consolidated Gas scored small net gains. Optionists take the view that there is in the country an enormous surplus of food products that will sooner or later be wanted by Europe and that a supply of bills against cotton or other articles may come upon the market any day and materially lower the rates of exchange. Moreover, imports for the holidays will cease; imports of sugar and coffee are of late comparatively small, and commercial bills will soon be adequate to meet the semi-annual interest and dividends due abroad. The banks, too, are gaining in their resources. They gained in cash last week over \$2,000,000 and now hold a surplus reserve of nearly \$7,000,000.

Time money is offered in liberal amounts much beyond the demand. Rates $4\frac{1}{2}$ per cent. for thirty days, 5 per cent. for sixty days to five months, $5\frac{1}{2}$ to 6 per cent. for longer dates. Mercantile paper is still in good demand, and reasonable expectations are entertained that it will increase largely during the coming month. Rates 5 per cent. for indorsed bills receivable, $5\frac{1}{2}$ per cent. for first-class single names, and $5\frac{3}{4}$ @ 6 per cent. for others.

Shippers have been threatened with an interruption of trade via the Isthmus of Panama as a consequence of pending litigation, but the Pacific Mail Company authorize the announcement that they will receive and forward freight as usual, giving a through bill of lading, and the Panama Railroad Company affirm that they will soon establish a new line of steamers over the entire route.

The merchandise markets were without striking feature beyond the extraordinary activity on the Cotton Exchange surpassing the highest record. On Friday transactions aggregated 574,000 bales, representing about \$27,000,000. The South furnished large buying orders, stimulated by reports that the crop would be less than former estimates. Prices of cotton in New York have advanced $1\frac{1}{2}$ ¢ pound within a week.

Silver certificates were strong. In London bar silver rose to 39 $\frac{1}{2}$ d. ¢ ounce.

Sterling exchange was firm at \$4.86 @ \$4.88 $\frac{1}{2}$.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, November 30, 1892.

Operations in Pig Iron warrants have been on a moderate scale and the several branches of the market remain bare of distinctly new or interesting feature. On price of Scotch there has been an improvement to 41/9, but Cleveland has remained at 37/ and Hematites eased off to 46/3. In Scotch there has been some trading between regular operators, but otherwise very little interest on their part, while scarcely any orders come from outside sources. Cleveland shipments in November were the largest for any month this year, but that fact has little weight since the conditions existing in the Manufactured Iron and Steel trades are unpromising. The larger Steel mills are running on half time, and competition is very keen. Several mills in the Barrow district have shut down, after vainly endeavoring to secure orders for Rails at £4 and other products at corresponding prices.

The Glengarnock Steel Company are reported to have received quite large orders of Steel Bars from the United States for Tin-Plate manufacture.

Pig Tin prices have dropped 12/6, and the market has been dull at the decline. Speculation is still limited, with hardly any interest displayed by outsiders. Cash offerings at the lower prices are small, however, and spot lots of Straits therefore command a premium over futures.

In Copper prices there has been a further advance of 17/6, followed by a subsequent slight reaction. Speculative interest has been broader, consumption good, the statistical position improved and comparatively little Metal offered. There was a strong demand on Monday owing to better American advices and reduced offerings. Furnace material is exceedingly scarce, and American Matte has been sold at 10/.

Tin Plate market is quieter and business is returning to old grooves, dealers being shy of futures and confining operations to near wants. American demand, in particular, is quieter. Fair quantities of choice brands of Cokes have been taken at good prices for Frisco and Russia. Terns neglected.

Cleveland Pig.—Business is slow and makers offer quite freely at 37/, f.o.b. shipping port, for No. 8 Middlesborough.

Scotch Pig Iron.—There is no improvement in the demand from makers' brands, and prices show little change.

No. 1 Coltness, f.o.b. Glasgow.....	55/
No. 1 Summerlee, " ".....	53/
No. 1 Gartsherrie, " ".....	52/
No. 1 Langloan, " ".....	53/
No. 1 Carnbroe, " ".....	44/3
No. 1 Shotts, " at Leith.....	53/
No. 1 Glengarnock, " Ardrossan.....	49/6
No. 1 Dalmeilington, " ".....	49/
No. 1 Eglinton, " ".....	46/6
Steamer freights, Glasgow to New York, 1/4;	
Liverpool to New York, 7/8.	

Bessemer Pig.—No improvement in the demand and prices rather weak at 48/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese.—Demand is moderate and prices remain without change. English 80 % quoted at £11. 11/3, f.o.b. shipping port.

Steel Rails.—There is no change for the better in the demand. Heavy sections quoted at £4, f.o.b. shipping port.

Steel Billets.—Business is moderate and prices are still rather easy. Bessemer, 2½ x 2½ inches, quoted at £4, f.o.b. shipping point.

Steel Blooms.—Market dull and unchanged. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Steel Slabs.—Demand slow and prices barely steady. Bessemer quoted at £3. 17/6, f.o.b. at shipping point.

Old Iron Rails.—There is little doing and demand continues slow. Tees quoted at £2. 10/ @ £2. 12/6 and Double Heads at £2. 15/, f.o.b.

Scrap Iron.—The market remains quiet and unchanged. Heavy Wrought Iron quoted at £2. 2/6 @ £2. 5/, f.o.b.

Crop Ends.—Market dull and prices nominal. Bessemer quoted at £2. 10/ @ £2. 12/6, f.o.b.

Manufactured Iron.—Buyers' operations are on a moderate scale, and prices show little change. We quote, f.o.b. Liverpool:

Staff, Ordinary Marked Bars	£ s. d.	£ s. d.
" Common	8 5 0 @	6 12 6
Staff, Bl'k Sheet, singles.....	7 15 0	
Welsh Bars (f.o.b. Wales).....	5 13 9	

Tin Plate.—The market quiet at the close, but steady. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	13/6 @ 14/
IC Bessemer Steel, Coke finish.....	12/3 @ 12/6
IC Siemens.....	12/6 @ 12/9
IC Coke, B. V. grade 14 x 20.....	12/3 @
Charcoal Terne, Dean grade.....	11 9 @ 12/

Pig Tin.—Market closed easy. Good business at the decline. Straits quoted at £93. 2/6 for spot and £93 for three months' futures.

Copper.—Firm and fairly active market at the close. Merchant Bars quoted at £47. 17/6 spot and £48. 7/6 three months' futures. Best selected, £52. 15/.

Lead.—Market quiet and barely steady at £10 for Soft Spanish.

Spelter.—Moderate business at about £18. 17/6 for ordinary Silesian.

Imports

Hardware, Machinery, &c.

Aukam, Herman & Co., Mach'y, pgs., 20	
Baker, Hermann & Co., Arms, cs., 7; Cutlery, cs., 3	
Dowling, R. F. & W., Mach'y, pgs., 12; Hdw., pgs., 2	

Folsom Arms Co., Arms, cs., 2	
Hammacher, Schiemmer & Co., Nails, cs., 38	
King, William, Mach'y, cs., 1	
Pim, Forwood & Co., Mach'y, pgs., 33	
Pratt & Farmer, Hdw., cs., 5	
Richard, C. B. & Co., Mach'y, cs., 20	
Strausky & Co., Cooking Utensils, cs., 70	
Schoverling, Daly & Gales, Arms, cs., 7	
Scranton Lace Company, Mach'y, cs., 3	
Smith, W. O. & Co., Mach'y, cs., 2	
Ward, Jas. E. & Co., Mach'y, cs., 4; Nails, cs., 163	
Werlemann, H., Arms, cs., 16	
Wiebusch & Hilger, Arms, cs., 2; Chains, cs., 30	
Worthington, G., Anvils, 36	
Order.—Mach'y, pgs. 32; Hdw., cs. 8	

Naval Ordnance.

The annual report of Commodore Folger, chief of the Bureau of Ordnance, first treats of the subject of breech-loading rifles, and tells how the tendency to lengthen the guns has involved heavier construction, to make them stiff enough for the new smokeless powder. To arm the vessels of the new navy 381 guns, varying in caliber from 4 inches to 13 inches, will be required, and of these 237 have already been completed and 116 are afloat. A marked step in advance has been made in improving the breech mechanism of the 10 and 12 inch guns, so that they may be worked easily and rapidly by hand, thus reducing the chance of disablement of the gun by a chance shot, which would cut off the supply of electric, hydraulic or other power which formerly operated the breech mechanism.

The bureau is now building a nickel steel gun on new designs invented by Wm. Sellers. It is stronger and better than ordinary gun steel, and the designs will permit of the reconstruction of the gun whenever the tube becomes worn. The use in guns up to 6 inches in caliber of fixed metallic ammunition, which is nothing more or less than a gigantic metallic cartridge, has resulted so satisfactorily that it is said to be merely a question of time before the idea will be applied to the larger calibers.

The rapid-fire mechanism, as applied to 5-inch guns, has enabled five shots to be fired from one gun in 19 seconds; but the result of the application of this mechanism to the 4-inch gun was followed by results still more remarkable, for it has been possible to fire five shots in 14 seconds, which means, according to the report, that within a range of 6000 yards this gun will maintain five shells in the air at the same moment, the last leaving the muzzle before the first has reached the target.

The report states that it is appreciated that a decided revolution in the character of the armament of vessels of war is imminent. The batteries of naval vessels will be composed of two classes of guns; the first, as at present, of great length and power, using armor-piercing projectiles, and the second shorter guns of very large bore, and firing projectiles containing charges of powerful high explosives, the latter being intended for use against the unarmored portion of the ships.

The deliveries of automobile torpedoes under contract is said to have been delayed by the difficulty experienced in securing suitable flasks, but these have at last been obtained from domestic steel companies, and a number of Howell, Whitehead and other torpedoes are expected to be presented for testing at an early date.

Commodore Folger speaks approvingly of the submarine boat, now a subject of experiments at Chicago. He says that, while full success has not been attained, the invention is promising, and suggests the combination with it in offensive warfare of a controllable floating torpedo or submarine gun. The tests of the Ericsson submarine gun and projectile are said to have demonstrated that a fairly accurate range of at least 600 feet could be obtained, but that the projectiles are too weak, and the tests would be resumed with newer

and stronger ones. The bureau will recommend that all naval rams be supplied with the submarine guns. Designs are submitted for a ram of new model, with short-bore rifle mortars, firing projectiles of nickel steel carrying bursting charges of 200 pounds of high explosive, two submarine guns designed to discharge in rapid succession projectiles containing 500 pounds of high explosives, and with nickel steel armor carried clear down the sides as a protection against torpedoes.

Under the head of torpedo boats the report makes a strong recommendation that petroleum be used for fuel in these boats, increasing their radius of action, giving better control and generally increasing their efficiency.

Much space in the report is devoted to the subject of armor plate. It is stated that a transfer was made of part of the contracts held by the Bethlehem Company and the Carnegie Company. The first named company were better equipped than the latter for the manufacture of heavy plates, and the Carnegie Company were better equipped to make thin plates, so the transfer was arranged on that basis.

Touching the development of armor in this country, the report describes the test last July of two Harveyized 10-inch nickel steel plates. On one of these 5 inch Holtzer shells were smashed without injuring the plate. The test was more severe than any ever before made, and the report states:

"It will be appreciated that these results speak for themselves and need no further comment from this bureau. . . . After such results no doubt could remain as to the correctness of the conclusions of last year's report, and accordingly the bureau has recommended that armor hereafter be ordered treated by the Harvey process in all cases. In the specifications for the new armor contract, now being drawn up in the bureau, the subject of more severe tests and requirements for this greatly improved product is being carefully considered."

At a meeting of the Central Traffic Association, held in Chicago recently, it was agreed to continue until further notice the present rates on pig iron and other articles taking pig-iron rates from Pittsburgh and vicinity to that place. The present rates are on the low basis established on March 20 last, when navigation opened, and which have been continued right along, but were to expire on December 31 of this year. In explanation of the action taken at this meeting in extending these rates for an indefinite period, it is stated that the railroad officials agreed that there was nothing in the present condition of the iron and steel markets to justify an advance in rates.

President Holden of the Delaware & Lackawanna Railroad, like President McLeod of the Reading, is high authority in the anthracite coal trade. The latter estimates the maximum possible annual output at 55,000,000 tons. The former says that under the most favorable circumstances it could not exceed 50,000,000 tons.

The German Government, apprehensive that the new army bill introduced into the Reichstag will cause many young men to emigrate to the United States, is endeavoring to secure legislation that will prevent the loss of valuable military material. Other governments, it is thought, will follow the example of Germany.

Orders for 100 locomotives for the Baltimore & Ohio Railroad are being placed with different builders. Altogether the expenditure for rolling stock this year will amount to \$2,500,000.

HARDWARE.

Condition of Trade.

IT IS PLEASANT to be able to report that the closing month of the year opens with a gratifying volume of business and with an improvement in the demand during the past week. The jobbing houses are in most cases fairly busy on assorted orders received from their customers, winter and holiday goods being in especially good demand. Manufacturers in some lines report trade quiet, but in others demands are made upon them for goods which they cannot supply promptly. Advices in regard to retail trade throughout the country show that a good steady business is doing in nearly all sections and merchants are buying freely but carefully in order to keep their stocks in good shape. There is no disposition to order in excess of the regular requirements of business, the tendency being to carry small stocks and purchase frequently. The general tone of the market is not regarded as justifying speculative orders, as prices, without being lower, give, on the whole, little evidence of increased strength. There is more or less complaint in regard to collections in some quarters; but all things considered, payments are made with more than the usual promptness.

Chicago.

(By Telegraph.)

The demand for Shelf Hardware keeps up remarkably well considering the lateness of the season. Minnesota and Dakota trade has latterly been rather dull, which is attributed to the fact that farmers have been holding their grain or else shipping it to the elevators to be sold on their own account, which in either case prevents them from settling up accounts with local Hardware merchants, who are thus compelled to purchase only sparingly from jobbers. Other sections of the West having more diversified crops are doing better. Holiday goods are moving very freely, trade in some States having been so heavy that manufacturers are considerably behind in filling orders. Screws were inclined to weakness early in November, but extreme quotations have been withdrawn, and 70 and 10 and 10 per cent. discount is now about the regular jobbing price. Machine Bolts are firm at the low rate at which they are now selling, the demand having been so large for the past three months that manufacturers have had no cause to make special efforts to push business. The advance in Ingot Copper has benefited the Brass trade, large consumers having placed orders the past week

for a year's supply of Rods and other products. They feel that they are safe in stocking up at present prices of Brass, which are as low as have been known for at least a third of a century.

St. Louis.

(By Telegraph.)

The Hardware trade is in excellent condition considering the weather prevailing during the past week, which has been rainy and disagreeable. Country orders have been coming in in good shape, and the local demand is excellent. Holiday goods are beginning to move freely, and in some lines the trade are pushed to fill orders. The strong condition of the Copper market has caused a firm feeling in Copper goods, which have not, however, been advanced as yet. Tin Plates are in good demand. In Barb Wire, Wire and Cut Nails trade is dull. The consolidation of the Barb Wire interests of five leading concerns into what is known as the Consolidated Steel & Wire Company will no doubt have a salutary effect on the prices of Barb Wire and Wire Nails. Collections are excellent.

Omaha.

LEE-CLARKE-ANDRESEN HARDWARE COMPANY. — We have no variation to chronicle from Omaha jobbers of Hardware relative to volume and condition of business during the past two weeks. The conditions have remained unchanged for so long a time that it seems superfluous to repeat the fact that trade continues to be all that could reasonably be desired, and really better than ever before in its history. If there was just cause, for complaint there would be more to offer in the way of remarks, but with the satisfactory prevailing conditions of which we are seized and possessed there is not much room for comment aside from the bare statement of facts. Our reports, therefore, are curt and direct rather than voluble.

As far as jobbers on this river are concerned, a feeling of reciprocity exists among them, by which, to a great extent, a respect for each other's territory is carefully regarded.

Last spring the territory west of this river was invaded by outsiders, who attempted to steal a march on the jobbing trade located on this river, by dumping carloads of certain goods into the territory and setting prices at such a mark that little or no profit remained.

A repetition of this state of affairs would be a matter for regret; at the same time it is undoubtedly the intention of all the local jobbers interested, should occasion require, to adopt a system of reprisals, simply as a measure of defense, that will probably produce the desired effect. We repeat, we trust no cause for this action will arise.

New Orleans.

A. BALDWIN & Co.—Business has resumed its normal condition in this section of the country since the settlement of our labor troubles. It also shows a decided improvement, and it is brightening up considerably. The advance in the price of Cotton has infused new life into the situation, and orders are coming in much more freely than we anticipated.

Merchants in Texas are taking advantage of the extremely low rates of freight and are piecing up their stocks in anticipation of a much better winter's business than they looked forward to.

The movement of Shelf Hardware shows a considerable gain, and the low price of staples enables us to do a very large business in this line.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—There is almost nothing new to chronicle. Trade has run along smoothly, being equal to that of any previous year for November, the weather during nearly the entire month being exceptionally fine. Farmers are as well prepared for winter and next spring as they have probably ever been, so that although collections are not up to expectations the situation in general is favorable. Collections will run on into next year further than usual, and by next spring it is probable the general condition of customers' accounts on our jobbers' ledgers will show fairly well. Prices are without much change. Barbed Wire is not showing any prospect of advance, but it is expected to hold its own firmly in the present conditions and with the present prospect of the Iron and Steel market.

Portland, Ore.

FOSTER & ROBERTSON.—Since our last we have been experiencing some of our usual winter weather. Owing to the heavy rainfall in Washington, as much as 3½ inches having fallen in 24 hours in some places, travel and shipping have been at a standstill over the Northern Pacific to the north of us. On the east the Union Pacific has now been delayed for a week, owing to an immense landslide some 40 miles from here on the Columbia River. Having their river service to fall back on, however, they have kept freight and travel moving. The storm has been central over Washington, and so far has done no damage in our immediate neighborhood. Considering the weather, trade has held up well. Collections are slow, not improving as we expected they would by this time.

Complaint comes from every section of the difficulty in making collections. The farmers are holding their wheat whenever they can owing to the extremely low price prevailing. The only encouraging outlook for next year's business is the low rates of freight by Cape Horn, enabling us to lay

down our goods here cheaper than at any time heretofore. There have been no changes in prices to note.

Louisville.

W. B. BELKNAP & Co.—We have to report a most excellent demand for goods. We never have seen them move in larger volume in the aggregate, taking light and heavy Hardware stock together, and yet, singularly enough, prices fail to respond to any marked extent. The idea evidently prevailed that when the Homestead Mill got well under way there would be a large amount of product on the market and prices must react. This situation, it seems to us, has been too heavily discounted. The business of the country during the past two years of close, economical buying has gone on expanding by natural growth and by the accumulation of wealth until the producing capacity is nearly, if not fully, occupied. This is demonstrated by the difficulty experienced in getting immediate deliveries of all large staple articles—Bar Iron, Sheet Iron, Wire Nails, Screws, Bolts, Rivets, Horseshoes &c. The country at large has been so used to an ample and rather pressing supply, that any stoppage of it, no matter how short, occasions an immense amount of inconvenience.

Some point has been made of the closing down of the Illinois Steel Works, at Joliet, announced through the Associated Press. We think no Rail mill would have to close down if it would take orders for Steel Rails at a reasonable figure, based on the general Steel market. While Billets have been selling at \$22 to \$24 per ton, Steel Rails have been held firm by the combination at \$30, at Pittsburgh, with the idea that the railroads would be compelled to buy in equipping for the Chicago business. In this they have been disappointed and the purchases, we are informed, have been far below expectations. If the Rail makers will reduce the high figures of the combination and come down to the neighborhood of \$25 or \$26, at which Rails were sold some time ago, before the mechanical contrivances were employed on which Mr. Carnegie lays much stress as cheapeners of production, we believe the concern mentioned and some of the others will have plenty to do rolling Steel Rails. We drop this hint, not evolved from our inner consciousness, but as the result of an explanation of the situation given us by one of the largest Steel concerns of Pittsburgh.

Cleveland.

THE W. BINGHAM COMPANY.—Trade has somewhat improved in the last two weeks, the demand for Builders' Hardware of all kinds being especially good, and the winter-like weather we have been experiencing lately has stirred up the season goods to quite an activity. Many orders are being placed for Wire, both Barbed and Plain, and also Wire Nails. Prices firm, with an upward tendency. The outlook for the winter and spring is excellent, and if the politicians will only let us alone we predict a most satisfactory business.

Baltimore.

CARLIN & FULTON.—In our last letter we expressed the hope that in this we might be able to report an improved condition of trade and we are glad to say that such is the case. This we can attribute to the stimulus of cold weather, the cessation of political discussions, the improved prices for cotton and wheat, and the necessity which exists generally for renewing depleted stocks. We, of course, cannot expect between now and the end of the year any extraordinarily heavy trade, but it is most encouraging to see business resume at least its normal state and to hear the general gratifying predictions for the year 1893.

The questions of currency and tariff are no doubt of vital importance to every individual in our land, but the farmer who needs a Hoe for the next season's crop and the carpenter who wants a Saw for the house upon which he is working, cannot wait to defer the purchase until the effect is ascertained of a possible reduction on the raw material in one or two years from now.

The country generally is in want of goods, especially the South, and just so soon as the agricultural products of the land will begin to reimburse the farmer for his labor and capital employed, then at once will his pressing necessities be supplied and business thus revive.

The financial condition of the average storekeeper is probably as good as it ever has been, the percentage of failures has diminished most considerably, as is shown by the statistics of the mercantile agencies. Collections are probably as good as at any other corresponding season, and we see no reason why business should not prove most satisfactory from now on.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The two weeks of trade interruption, owing to the Presidential election, as reported in our favor of November 17, appears now to be a thing of the past, and we are able to report a revival in trade since that date, with present prospects of three weeks of good trade between this and January 1.

There is now considerable activity in the iron market, as well as in the various mills located throughout our State; also activity in the various industrial factories, which are working on full time. The Edge Tool manufacturers are further behind their orders than is usual with them this late in the season.

It is becoming a serious question with the large jobbers as to how early it is necessary to order their stock in advance of wants, as manufacturers of late appear to be depending upon orders to work their hands, and consequently any accumulated stocks that will occur appear to be in non-active rather than active selling goods; hence the jobber suffers considerably when his stock runs low. As a rule, it requires double the care to keep one's stock in condition in order to complete orders that it did two years ago.

The recent advances that have taken place in the price of cotton should ma-

terially help the cotton growing States that have suffered from low prices for nearly two years past.

We see it predicted by some writers who have investigated the subject that the present full prices are not guaranteed by present demand, especially the foreign demand, which is not heavy at this time. It is to be hoped, therefore, that holders will not lose the opportunity to realize while cotton remains at full remunerative prices.

The recent experience of the Western farmers is that they have lost heavily during the last few months by refusing to market their wheat at the rates that could be obtained some months ago.

The low prices that have been recently made on Barb Wire and Wire Nails have induced some large orders, and factories are very indifferent as to taking orders for future delivery.

Season goods, as a rule, are becoming scarce. This is especially so with Skates. It is impossible for any one house to complete their daily orders on these goods.

Notes on Prices.

Wire Nails.—The quotation for carload lots at mill is the same as last week, \$1.50 being the general price, which is, however, shaded for desirable orders. The tone of the market is firmer than it has been, and the volume of business considering the season good. Small lots from store in New York are held at about \$1.80.

Chicago, by Telegraph.—Wire Nails are in better demand than Cut, but trade is light in comparison with that of the early part of November, and some makers are seeking business with considerable vigor. Near-by makers have advanced their rates to \$1.65, Chicago, but their competitors are not so firm. Jobbers quote \$1.75 for small lots from stock.

Cut Nails.—The Cut Nail market is in substantially the same condition as last week. At a meeting of the Eastern manufacturers on Tuesday no agreement in regard to prices was reached, but it was decided to restrict production during December and January. Quotations are on a basis of \$1.40 to \$1.45 for carload lots on a 35 cent average. Prices in New York City are \$1.75 to \$1.85, with a fair demand, and \$1.60 to \$1.75, according to average, is quoted in carload lots, f.o.b. dock.

Chicago, by Telegraph.—Cut Steel Nails are inclined to quietness, and manufacturers look forward to a dull period for at least a month, unless the weather should prove favorable for outdoor work, which would encourage the prosecution of building enterprises. The local situation has been improved from the makers' standpoint by the shutting down of a factory which has been making very low prices. Manufacturers quote \$1.62½ on 30-cent average, and jobbers name \$1.65 to \$1.70 for small lots from stock.

Barb Wire.—The trade will note with interest the announcement of the organization of the Consolidated Steel & Wire

Company, which is an important event in connection with the Barb Wire market. The market appears to be in a somewhat better condition, and manufacturers are disposed to withdraw some of their extreme prices. As a general quotation the market is fairly represented by \$2.45 @ \$2.50 for Four-Point Galvanized at mill, the former figure being easily obtainable on attractive orders. Prices in New York are still \$3 10 in small lots and \$3 for carloads.

Chicago, by Telegraph.—Barb Wire manufacturers report business picking up to some extent, but the demand is still only moderate. The consolidation of five Barb Wire companies, referred to elsewhere, is variously regarded by the trade. Some are of the opinion that prices will be stiffened by the union of so many large concerns, while others incline to the opinion that it means more serious competition than ever for current trade. First indications, however, are toward conservatism, as quotations on carload orders are \$2.25 for Painted and \$2.70 Galvanized. Less than carloads are quoted at \$2.35 to \$2.40 and \$2.85 to \$2.90 respectively.

Cutlery Trays—Campbell Cutlery Company, Syracuse, N. Y., of whose Cutlery Trays we have given a description, quote their Cutlery Trays in fine canton, with heavy and soft nap, at \$2.50 per running foot, showcase measure, five trays high. The following extra prices are also made:

	Per running foot.
In fine velveteen.....	\$0.50 extra.
In fine plush.....	1.00 "
Six trays high.....	.50 "
Seven trays high.....	.75 "
Eight trays high.....	1.00 "

Their Druggists' and other Trays in fine black and red book muslin are quoted at \$2.50 per running foot, three trays high, with the following prices:

	Per running foot.
In fine canton.....	\$0.50 extra.
In fine velveteen.....	1.00 "
In fine plush.....	1.50 "
Four trays high.....	.75 "
Five trays high.....	1.50 "

It is stated that Tooth Brush Trays run back 16 inches and are 1½ inches high, with ten divisions.

Rivets.—Since our last report there has been no improvement in the Rivet market, but, on the other hand, it is now characterized by more irregularity and is lower than a week ago. The volume of business is good, as buyers are disposed to avail themselves of the opportunity the present situation affords for laying in stocks at low prices. When the manufacturers are well filled up with orders it is to be expected that there will be a recovery and that higher quotations will be announced.

Wrought-Iron Pipe and Boiler Tubes.—The revised list on Boiler Tubes which was recently adopted by the manufacturers has been so changed as to permit one discount applying to the whole list instead of two or more, according to size, as heretofore. The Wrought-Iron Pipe market is in excellent condition and the recent

advance quite firmly maintained. The revised list on Boiler Tubes is as follows:

Lap-Weld Boiler Tubes.

Outside Diameter. Inches.	Price Per foot.	Outside Diameter. Inches.	Price Per foot.
1	\$0.37	4½	\$0.62
1¼	.35	5	.74
1½	.31	6	1.00
1¾	.28	7	1.45
2	.26	8	1.85
2¼	.29	9	2.25
2½	.32	10	2.75
2¾	.36	11	3.25
3	.39	12	3.55
3¼	.43	13	4.20
3½	.45	14	4.75
3¾	.47	15	5.75
4	.54	16	6.75

Cordage.—The condition of things which has prevailed for some time in the Cordage market has resulted in slightly lower prices. Although there has been no official announcement of a change by the National Cordage Company, the market is feeling the effect of the active competition of outsiders. Both the National Cordage Company and their competitors have accordingly made slight reductions in their prices. The market is represented by the following net prices, which are subject only to the discount of 1½ per cent. for cash in 10 days, terms, f.o.b. New York or factory:

Manila.

7-16 inch diameter and larger, # lb.....	10½¢
¾ inch, # lb.....	11¢
¾ and 5-16 inch, # lb.....	11½¢
Tarred Rope, # lb.....	10¢
Hay Rope, # lb.....	10½¢

Sisal.

7-16 inch and larger, # lb.....	8¢
¾ inch, # lb.....	8½¢
¾ and 5-16 inch, # lb.....	9¢
Hay Rope, # lb.....	8¢
Tarred Rope, # lb.....	7½¢
Medium Lath Yarn, # lb.....	7½¢

New Zealand.

7-16 inch and larger, # lb.....	6½¢
¾ inch, # lb.....	7¢
¾ and 5-16 inch, # lb.....	7½¢
Hay Rope, # lb.....	6½¢
Tarred Rope, # lb.....	6¢

On very large lots a concession of from ¼ to ½ cent per pound can be obtained from above prices, f.o.b. factory or New York. It will be observed that these quotations are lower in proportion to the price of the raw material than have ever before been known. Notwithstanding this fact, the market is not characterized by a firm tone, and the trade are not disposed to purchase beyond their early requirements. The possibility of a change sooner or later in the duty on Hemp may, it is thought, have some effect on the price of Cordage, inasmuch as it will, perhaps, deter the National Cordage Company from accumulating as large a stock as they otherwise would in their attempt to control the market, and any reduction in the duty would, of course, directly affect the price of Rope.

Glass.—There has been no diminution in the demand for Glass during the past week, and if any change is noticeable it is a somewhat better demand, caused by colder weather. Factories report a good demand, and actual prices obtained by manufacturers are said to be more nearly the official quotations than they have been able to secure for some time. There is a feeling among manufacturers that steps should now be taken, while the demand

for Glass is good, toward formulating some sort of plan whereby better prices could be secured. The plan that was talked of in January, 1891, of forming a few central distributing points for the Glass manufactured by the different factories, seems to be, in a general way, finding the most favor.

It may result in an arrangement whereby the product of the various factories will be pooled, classified and distributed from a central point. It is impossible to say definitely just what plan will be decided upon, or whether any proposition can be agreed upon, where there are so many different views to be considered and so many interests to be satisfied. It was supposed that the matter would be brought before the meeting of the Western glass manufacturers to be held at Chicago November 29. As yet no reports have been received from the meeting. The demand for imported Glass is reported as fair, and prices are being firmly adhered to. The Plate-Glass factories report the present demand as good, with unchanged prices. Quotations are as follows: American Window Glass, 1000-box lots or more, 80 and 15 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and 7½ per cent. discount to 60 and 2½ per cent. discount. Imported Plate Glass 60 per cent. discount to 60 and 10 and 5 per cent. discount.

Export Notes.

THE NATIONAL BANK OF MEXICO has advanced the rate of discount from 7 to 8 per cent. Nine is asked on second-grade paper. There is an increased demand for money and a more active trade. Crop reports indicate that the central and southern parts of the country will have a sufficiency of maize, but northern Mexico will doubtless be unable to fully supply itself from the rest of the country, thus necessitating the continued purchases of American grain next spring. The railways generally report more active business. The Mexican Southern Railway will open for business early in December.

A lost gold mine in Mexico has been reported as discovered in the western part of the State of Sonora, in northwestern Mexico. The find was brought about through the agency of a native Indian, and is believed to be one of the lost mines of the Aztecs. It is said the mine shows evidences of having been worked for centuries.

Charles A. Coombs of the Coombs, Crosby & Eddy Company has just returned from a month's commercial trip to Mexico, and reports a fair volume of trade.

The following delegates have been chosen to represent the New York Board of Trade & Transportation at the Nicaragua Canal Convention to be held in New Orleans December 1 and 2: Ambrose

Snow, president of the Board of Pilot Commissioners; Darwin R. James, F. B. Thurber, G. Waldo Smith, G. L. Pease, Aaron Vanderbilt, George West, Capt. G. L. Norton, editor of the *Marine Journal*, and Orlando B. Potter.

Governor Foster of Louisiana has accepted the invitation to deliver the address of welcome at the coming Nicaragua Canal Convention, preparations for which are now completed.

W. J. Kingsland, export commission merchant and manufacturers' agent, 56 New street, New York, recently started South on a recreation trip, but was taken ill on the train, being obliged to return. His indisposition took the form of pneumonia, which for a time was a very serious matter, but he is now somewhat better. Mr. Kingsland is largely interested in Australia and New Zealand.

Thomas A. Eddy of the Coombs, Crosby & Eddy Company arrived in New York last week from Argentina and the River Plate ports via England, where he has been in the interest of his company developing new business since last June. He reports trade in that section gradually improving and the premium on gold falling.

W. H. Douglas of Arkell & Douglas, agents in the United States for the Australasian-American Shipping Company, Limited, recently cabled from Australia to refrain for the present from putting on any vessels for Melbourne. In this connection freight for that port is being turned over to Mailler & Quereau of the Kangaroo Line, 58 Stone street. It is not understood that this arrangement is other than temporary so far, Arkell & Douglas evidently desiring to pursue a conservative course in view of the depressed state of trade and scarcity of Australian freight. They have sent no vessel to Adelaide since the beginning of the current year.

There has recently been issued by the Mercantile Corporation of the United States and South Africa, Limited, for whom Haase & Vaughn 140 and 142 Pearl street are agents, a prospectus calling attention to the inauguration of a new commercial enterprise designed to interest manufacturers and producers in this country, in the work of extending their market for goods made here suitable for South Africa. The purpose of the organization, as stated by its projectors, is to bring together in harmonious relationship the merchants of South Africa, who know best the needs of their own market, and the American manufacturers and producers who are best acquainted with their ability to compete successfully, through the medium of this body, which will perform the commercial functions indispensable to trade. The advantages of direct interchange of crude products for manufactured goods between countries where no discriminating duties exist are pointed out, and also the fact that in consequence of indi-

rect business between the United States and South Africa natural commercial relations have not been developed commensurate with their value. The statement is made that South African merchants have been first to recognize the benefits to be derived from direct dealings with this country, and in order to make themselves more independent of European markets; to find new outlets for their increasing raw products; to open their markets to American goods which can compete with those of other countries, this company has been organized. Accompanying the pamphlet is a new map of South Africa, 16 inches square, giving Cape Colony, Natal, Orange Free State, Transvaal and adjacent territories, showing completed railroads and those projected coach routes, &c. The sections producing gold, copper, lead, coal and iron are indicated by a system of colors, while those in which wine, wool, mohair, maize, wheat, sugar, &c. are produced are so marked, together with the distances by sea from Cape Town to the leading ports of entry.

The managers of the New Orleans Cotton Exchange have appointed a committee of five to represent their exchange at the Nicaragua Canal Convention, to be held in New Orleans, December 1, and have adopted resolutions recording their belief in the great advantages which will accrue to the commerce of the United States by the early construction of the canal, pledging themselves to lend their influence to the furtherance of the project.

The temporary commercial arrangement between this country and the Republic of Salvador, effective December 30, 1891, has been supplanted by a final agreement, the signatures to which were exchanged November 23 at Managua by the Minister of Foreign Affairs, as authorized by the Congress of Salvador, and the representative of the United States. The belief is entertained at the State Department at Washington that this will result in promoting increased trade between the two countries, and will open a profitable market to many products and manufactures of the United States hitherto retarded by various restrictions.

As attention is being directed to the River Plate ports (the most of which, with the exception of Montevideo, are in the Argentine Republic) to the desirability of a larger market for the output from this country, manufactured and otherwise, and apropos of the new steamship service recently instituted with the financial backing of the Standard Oil people, it may be of interest to note that in 1890 Argentina imported merchandise to the value of \$142,241,000, and exported merchandise valued at \$100,819,000. Of the imports \$57,000,000 went from Great Britain, \$30,000,000 from France and \$15,000,000 from the United States. Of the exports Great Britain took \$25,000,000, France \$38,000,000 and the United States \$8,000,000. The port of Buenos Ayres alone

handled \$103,175,961 of the imports and \$57,742,342 of exports. The present Administration, inaugurated last October, seems to be acceptable to the people. As this is their summer they are extremely watchful for indications of cholera, which, however, have not yet appeared.

Consolidated Steel & Wire Company.

THE NEGOTIATIONS which have for some time been going on among some of the prominent manufacturers of Barb Wire have resulted in a consolidation of interests under the name of the Consolidated Steel & Wire Company, who have purchased the mills and business of the following companies:

ST. LOUIS WIRE MILL COMPANY,
St. Louis, Mo.
BRADDOCK WIRE COMPANY,
Pittsburgh, Pa.
LAMBERT & BISHOP WIRE FENCE CO.,
Joliet, Ill.
IOWA BARB WIRE COMPANY,
New York and Allentown, Pa.
BAKER WIRE COMPANY,
Chicago, Ill.

In the official announcement of the organization of the Consolidated Steel & Wire Company it is stated that the above companies have been owned by practically the same stockholders for some time past, and the consolidation of these interests under the new name is for the purpose of simplifying the management, reducing the manufacturing and selling cost and securing the production of goods uniform in quality and appearance. The various mills and offices will be under the immediate management of the same gentlemen who have previously conducted them. The officers of the new company are as follows:

WILLIAM EDENBORN, president.
JOHN LAMBERT, vice-president.
ALFRED CLIFFORD, treasurer.
E. T. SCHULER, assistant treasurer.
E. E. PATTERSON, secretary.
J. W. GATES, general manager.

The general offices of the new company are in Chicago, with branches as follows: St. Louis, Mo., D. C. Miller, manager. Pittsburgh, Pa., W. H. Rowe, manager. New York, C. H. Rowe, manager. San Francisco, Cal., H. J. McManus, agent.

The following further information in regard to the company and their plans for the future are given in the official announcement:

The Consolidated Steel & Wire Company are incorporated under the laws of the State of Illinois, with a paid-in capital of \$4,000,000, and the capacity of our mills is as follows:

Wire Rods.....	90,000 net tons per annum
Plain Wire.....	275,000 " " " "
Barbed Wire.....	130,000 " " " "
Wire Nails.....	5,000 kegs daily

Making a total of 560,000 tons annually

In addition to the above staple goods, we manufacture largely Market Wire of every description (Annealed, Galvanized, Coppered, Bright and Tinned), as well as Bale Ties, Staples, &c.

We are the largest drawers of Plain Wire, and also the largest makers of both Barbed Wire and Wire Nails in the world. We will at once begin the erection of

blast furnaces, a steel plant and two additional rod rolling mills, which will enable us to furnish our trade with goods at bottom prices at all times, and as our mills are favorably located we can successfully compete with any manufacturer in our line.

We shall employ a full complement of traveling salesmen and carefully canvass all parts of America, as well as continue to increase our foreign trade. Prices on all goods in our line are low at present and while we intend to at all times meet legitimate competition we suggest to buyers that they will make no mistake in placing their orders early, as we look for an exceptionally large trade in the early months of 1893.

To all customers of the Baker Wire Company we wish to say that we shall continue the policy of that company and shall sell the Baker Perfect Barb to only one dealer in a town, thereby protecting the Baker Wire Company's exclusive agency system. This branch of the business will be under the direct supervision of C. S. Roberts, who has had charge of the business of that company heretofore, and all orders or inquiries regarding our Baker Perfect Wire should be addressed to the "Baker Wire Department" of the Consolidated Steel & Wire Company, Chicago.

Inquiries or orders addressed to either of our offices will receive prompt and careful attention.

The Van Camp Hardware & Iron Co.'s Catalogue.

THE LATEST ADDITION to Hardware literature in the way of large catalogues comes from the Van Camp Hardware & Iron Company, Indianapolis, Ind. Their catalogue just issued contains 1416 pages, 11 x 13 inches in size, and is a noble example of the necessary proportions reached by modern jobbing Hardware catalogues. The book is substantially bound in red and brown leather, with beveled covers, the paper and typographical work being beyond criticism. Each page is red lined, having a *fac-simile* of their trade-mark in the upper corner of the page nearest the center of the book, and the name of the company in the corner opposite. The first pages are devoted to illustrations of their principal buildings and office 78-82 South Illinois street, their Chesapeake street warehouse and their warehouse on Maryland street. For convenience the catalogue matter has been classified or divided into departments, the goods belonging to each department being found on consecutive pages. On the page immediately before those devoted to the index, the departments are enumerated as follows:

- No. 1. Mechanics' Tools, Farming Implements, &c., 1 to 588.
- No. 2. Locks, Latches and Builders' Hardware, 589 to 917.
- No. 3. Pocket and Table Cutlery, Razors, Scissors, &c., 918 to 994.
- No. 4. Guns, Revolvers, Ammunition and Sporting Goods, 995 to 1178.
- No. 5. Tin and Hollow Ware, Tinners' Tools and Supplies, 1079 to 1206.
- No. 6. Heavy Hardware, Wagon and Carriage Goods, 1207 to 1416.

The second department is again divided into six classes, each showing a full line of goods in quality, pattern and finish. Under the heading Builders' Hardware Department 2 are shown Pad, Cabinet and Trunk Locks. Under Locks,

Latches, &c., Class No. 1, are given Wrought-Steel Door Locks and Latches; Class No. 2 is devoted to Rim Goods, with Japanned cast-iron cases; Class No. 3 includes Mortise Goods, having iron and brass fronts; Class No. 4 shows goods of Branford Bronzed, Oriental design; Class No. 5 relates to goods of Bronze Metal, Oriental design, and Class No. 6 covers goods of Bronze Metal, plain bright finish. Classes Nos. 4, 5 and 6 have illustrations on the first pages of each of Butts in bronze colors, showing the actual color and finish of the goods in that class. Following the descriptions and prices of the above goods are numerous tables, comparative and otherwise, as aids in making selections.

The alphabetical index near the front of the book is a comprehensive one, arranged with the headings in heavy type, while the subheadings are in smaller type, but plain and distinct. The catalogue contains more than 6000 illustrations, the selections in all staple and miscellaneous goods having been carefully made, price-lists and descriptions receiving the same care. The discount sheet is to be supplemented from time to time with change sheets noting changes in list prices or discounts. In addition to this catalogue the company issue a special edition of 400 pages containing a full line of Heavy Hardware, Mechanics' Tools, &c., for the convenience of dealers and manufacturers using these goods only. Great praise is due to W. F. Quigley and G. W. New, who have had the entire charge of compiling and arranging these catalogues, for the thorough and artistic manner in which they have completed their undertaking. These gentlemen have been connected with the house for many years. The buildings required for the increasing business of the firm are their main store and offices, 78-82 South Illinois street, occupying a space of 70 x 200 feet, four stories with basement, a large warehouse on Maryland street, and the recently erected warehouse on Chesapeake street, a large five-story building, with basement, provided with electric elevator, &c.

The Yale & Towne Sample Case.

THE YALE & TOWNE MFG. CO., Stamford, Conn., and 84-86 Chambers street, New York, have recently constructed sample cases of novel design and of large surface capacity. As shown in Fig. 748, the case is circular in form, well proportioned, the samples being protected from dust and dirt by bent glass, which completely encircles the case. The case is so arranged as to provide four surfaces for sampling goods equal to that shown in the cut. The boards on which goods are sampled are of such thickness as to allow the showing of Mortise Locks as they would appear on doors, which adds much to the effectiveness of the display. On the parts not shown in the cut are sampled standard Yale Rim Night Latches, Rim Dead Locks, Mortise Night Latches, Mortise Dead Locks, standard Easy Spring

Locks, Padlocks, &c. Names and numbers are in close proximity to the goods, thus aiding in making selections. The entire sample case, including the circular glass, revolves on the base, bringing any or all of the samples to view from one standpoint. These cases already sampled are supplied to customers upon liberal terms. The fine array of samples, combined with the handsomely finished case, forms an attractive addition to the store furniture and would, no doubt, increase the sale of the

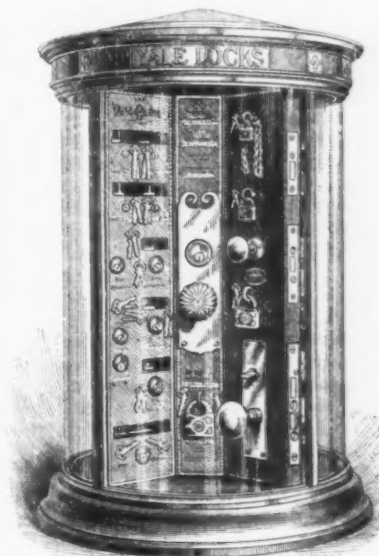


Fig. 748.—The Yale & Towne Sample Case.

line of goods shown. The case is about 3 feet in high and occupies about 2 feet of room on a counter.

The Tests of Wire and Cut Nails.

THE RESULT of the tests which are being made to-day at Watertown Arsenal as to the relative qualities of Cut and Wire Nails will be awaited with interest by manufacturers and the trade. Whatever may be the outcome, it remains to be seen what effect the result of the tests may have on the sale of the goods. Touching on this point a prominent Western Cut Nail manufacturer says:

The Cut Nail men of this locality made the proposed tests some years since and were perfectly satisfied of the superior holding capacity of the Cut Nail. The result of the tests was printed, and thousands, perhaps a million, placed in the heads of the kegs, and thus every consumer had a chance to see it. Besides our own test we had the Government test distributed in the same manner. We do not know if the advertisement was the cause, but the manufacture of the Wire Nails increased ever since.

Referring to the same matter, one of the largest producers of Wire Nails writes:

The Wire Nail is now so popular, and so rapidly taking the place of the Cut Nail, that we do not now think it necessary to talk the relative merits of Wire and Cut Nails, and go around making tests, as our traveling men had to do in the early days of the Wire Nail. This is, of course, an effort on the part of the Cut Nail people to change the drift of business toward the Wire Nails, but we do not think it will do them much good at this late day.

A disposition is evident on the part of Wire Nail manufacturers to regard the proposed tests as inadequate and as touching only one point, and that not a material one, with reference to the advantages of the two Nails. This question is fully discussed in the following letter from a prominent Eastern manufacturer of Wire Nails:

We cannot answer for what other Wire Nail manufacturers will do in this matter, but if they all think like ourselves, the transaction of the Cut Nail manufacturers will pass by unnoticed. If our judgment is worth anything we are inclined to think that no sensible Wire Nail manufacturer looks upon this test with any degree of interest or apprehension. The Cut Nail manufacturers have a perfect right to make indifferent tests as many as they please, but in our opinion the question is settled. Nails are not driven into a piece of wood and pulled out again. They are used to join pieces together, and the relative merits of the two kinds of Nails have fully been recognized by those who use Nails. When Nails are used for work where strength is of primary importance and where the task imposed upon the laborer who drives the Nail is also considered and especially for box manufacturers who use machines, in all of these cases the Wire Nail will be used. For scaffolding, foundry flasks and all kinds of work which has soon to be dismantled again after it has been put up and for all rough work, sometimes also on finished window frames, for the sake of cheapness, Cut Nails are used and frightful unsightly holes and cracks produced thereby, which are afterward smeared over with putty. The Cut Nail, on account of its much larger displacement of fiber over that of the Wire Nail, may require more power to be started, but after it is started the Nail is loose. The Wire Nail holds on to the end. The Cut Nail tears the fibers of the wood so materially that in the course of time, after they have had chance to dry away from the Nail, the hold is infinitely less than it is after it is first driven. With the Wire Nail the displacement is a true one, but not a punching and tearing of fibers. In addition to this, one important factor is generally overlooked—to wit: When the Cut Nail is driven, its two parallel sides are driven parallel with a fiber, but in case of a box, for instance, this parallelism exists only on the lid, while the Nail in entering the ends of the box has a tendency to drive the fibers apart, because on the ends of the box the fibers run at right angles to the lid. Hence it comes that it is very seldom seen that a box is nailed with common Cut Nails without observing that the entire end of the box is split from beginning to end through the center, and this is particularly the case when a box is used over again, and this is often the case. What use is the holding power under such circumstances? We could go on and recite hundreds of cases of similar nature, but, as stated before, the question in our mind is settled and no test will prevail against the universal judgment of parties who are using Nails.

A similar view is expressed by a well-known Western company, who suggest other tests beside that mentioned in the invitation of the Cut Nail manufacturers. This communication puts the matter in clear and concise form:

We shall not pay any attention to the proposed Nail tests, because what is proposed is entirely too incomplete.

We would feel disposed to look into the matter if the parties interested would offer to take from stock a keg each of numerous sizes and brands of Cut and

Wire Nails and make a practical test of the two Nails as to which is the cheaper to the consumer, not simply testing the drawing qualities, but as to the number of Nails in each keg that will do its work, the strength of the Nail to be tested cross-wise as well as its drawing power and the test to be made in sundry kinds of woods, instead of in a wood that is not used in the best Nail markets, and to take into consideration also the splitting of the woods and the power of the two kinds of Nails to go into hard woods.

The Nails in each keg should be picked over, examined and assorted, showing the net number of pounds in each keg of perfect Nails, throwing out slivers and Nails with imperfect points and imperfect heads. Any test short of considering all features of the two Nails will prove nothing satisfactory to the consumer.

Referring to the objection on the part of the Wire Nail manufacturers that the proposed tests are not sufficient to determine fairly the relative qualities of the two Nails, we are in receipt of the following letter from an Eastern Cut-Nail manufacturer:

We are unable to understand in what way the proposed tests are inadequate. We shall test first such Nails of both Cut and Wire as are sold in open market, and in the way they are used every day throughout the land. We shall also test Cut Nails cut as light as some of the Wire Nails, thus thoroughly demonstrating the superiority of one kind, whichever it may be.

If the Wire Nail people do not meet us we shall make the tests, or rather see them made by the Government Engineers at Watertown Arsenal and publish the result.

We should be glad to have your valuable journal follow up and publish all information regarding the matter, which is one of so much interest to the Hardware and building trades.

The letter which we print below is from a large Cut-Nail concern in Ohio, who refer specially to the changes which have been made in the size and weight of Wire Nails since they were first put on the market, and alludes also to the relative advantages of the two kinds:

Being Cut Nail manufacturers, with the information we have been able to procure up to this time, we are firmly of the opinion that the result of the test will be largely in favor of the utility of the Cut Nail. There are some features regarding the merits of these two classes of goods that would be of very great interest to consumers of Nails, could they be placed in the hands of the consumer rather than in the hands of the trade. For instance, some few years since, early in the development of the Wire Nail in this country, Wire Nails were made much lighter than Cut Nails of the same length. The Wire-Nail manufacturer succeeded in convincing the consumer that in buying Cut Nails the number of Nails to the pound was much greater and consequently much cheaper. Lapse of time developed the fact that the Wire Nails first made were too light for the service required of them, and from time to time since their weight has been increased so that now they nearly compare in weight with the common sizes of Cut Nails. This being so, and assuming that Cut Nails are worth \$1.50 base, and that Wire Nails are worth \$1.45 base, then 8 penny Cut Nails would sell for \$1.75 per keg, while 8 penny Wire Nails on present card of advance would sell for \$2.05 per keg, whereby the consumer is paying a royalty to the Wire Nail manufacturer of 30 cents per keg on 8-penny Nails, and getting no more Nails

in his 100-pound package than he would of 8-penny Cut Nails.

This illustration applies to many of the sizes in the common list of Nails, and it occurs to us that the gentlemen having the proposed test in charge should make this feature of their investigation a very prominent one.

Believing your valuable paper will properly advise the country of the result of this test and that manufacturers themselves will lend their aid in circulating the information, we remain, &c.

Prominent Cut Nail manufacturers in the East refer in the following terms to the tests proposed, and to their experience with reference to the holding power of Cut as against Wire Nails:

We have known for some time that the public is under the impression that Wire Nails will hold a greater strain than Cut Nails, which led us to make a number of tests at our works, proving conclusively that the holding power of a Cut Nail is far superior to that of a Wire Nail, a Cut Nail of equal weight and length driven in pine or hemlock holding about 35 to 40 per cent. more than the Wire Nail. The public test about to take place is intended to be participated in both Wire and Cut Nail manufacturers to determine a question that has been considerably discussed, and about which many erroneous statements have been made.

One of the largest producers of Cut Nails in the country alludes to the interest of the proposed tests in the following terms:

The writer participated in a similar test made in this neighborhood some years ago, the result of which clearly demonstrated the superiority of the Cut Nail in holding qualities over the Wire. As the result of these experiments were scattered broadcast, not only through the trade papers but in circular form, and as the correctness of the information thus obtained has frequently been verified by the Wire Nail manufacturers, we are of opinion that they will not be present at the tests so soon to be made. We, however, feel a very keen interest in the subject, and will note with pleasure your report.

Some of the manufacturers of Wire Nails are obviously disposed to regard the outcome of the test as unimportant, one of them referring to the fact that "the comparative merits of Cut and Wire Nails has been submitted to the infallible test of public opinion, and that the verdict has been in favor of the Wire Nails." In a similar strain another company say:

The question of the comparative merits of Cut and Wire Nails has been submitted to the infallible test of public opinion, and the verdict has been in favor of Wire Nails. We are not now prepared to state whether or not we will take part in the test proposed by the Cut Nail manufacturers. If the other Wire Nail men conclude to do so we will join with them. We are not afraid of any test to which Wire Nails may be submitted.

Of the same tenor are the expressions used by Western producers of Wire Nails in the following extracts from a letter just received:

We shall watch the proposed contest of the relative qualities of Cut and Wire Nails as invited by the Cut Nail manufacturers with as much interest as anyone, but we hardly think it possible that any of our company be present. As far as the contest changing the standing of the kinds with the trade is concerned, we think it will not cut any figure, as, whether Wire Nails hold up to the test they are supposed

to or not, the trade will continue to buy them just the same as they have always done.

The masses who are not mechanics can use Wire Nails with less trouble and less waste than they can use the Cut Nails, and this fact will render a verdict against the sale of Cut Nails every time.

The following letter from well-known Nail manufacturers in Pennsylvania indicates a disposition on the part of those who have proposed the test to meet the views of the Wire Nail manufacturers in regard to the kind of tests to which the competing Nails should be subjected, and it is to be hoped that the coming tests will be so conducted as to fairly bring out the relative qualities of the Nails in question:

If the Wire Nail manufacturers have confidence in the holding power of their Nails, there is no doubt but what they will accept the challenge. And if they do not attend and stipulate in what manner they want the tests made, we propose having them made in entirely fair manner and publishing the result. We are disposed to allow the Wire Nail people, not only to make such suggestions as they think proper, but will have test made as they may direct.

The following communication, which is from a well-known Cut-Nail manufacturer of Massachusetts, discusses the question as to the relative qualities of Cut and Wire Nails:

The invitation has been extended, over the signatures of ten or more of the leading Nail manufacturers of the East, to every recorded Wire-Nail manufacturer in the United States. All replies received up to this time have been in the form of offers to submit Wire Nails for the test, if the manufacturers may be allowed to coat them with cements or gums, or to specially prepare their surfaces by chemical or physical treatment.

These proposals have not been accepted, because the present undertaking is for the purpose of testing the holding power which Nails have by virtue of their forms, and not for the purpose of testing the strength of cements or gums or the efficiency of prepared surfaces.

The invitation, which you have printed in your columns, shows that the proposed tests are entirely "adequate" to cover the ground which was laid out for them; and that is, to settle the question whether length for length and weight for weight, so far as correspondences in these respects can be found, each Nail in the 4,000,000 kegs of Bright Wire Nails that were used in this country last year has more or has less holding power than each Nail in the 5,000,000 kegs of Cut Nails that were similarly used.

As regards the various devices for atoning for the defective holding power of Wire Nails by cementing, varnishing, gluing, acid eating, or otherwise preparing their surfaces, it may be said that none of these have met with general acceptance, but it is quite competent for the proprietors of them to enter into competitive tests among themselves to establish the relative value of their discoveries, and if it shall be demonstrated that any of these devices have merit sufficient to offset the costs attending their use, doubtless such devices, being equally applicable to both Cut and Wire Nails, will be adopted by the manufacturers of both, and in that case the one of the two Nails which has the greater holding power, by virtue of its form, will retain its superiority unaltered by the added process applied to both.

It may be added, however, that the manufacturers of Cut Nails are not looking for an early introduction of the glue pot as a prominent feature in the Cut Nail factory.

These tests arose in large part from a belief, on the part of the Cut-Nail manufacturers, that the public safety is being endangered by a tendency toward the use of Nails too light for the work to which they are put, and in part, also, from a desire upon their part to hasten the enlightenment of the public in reference to the true comparative merits of Cut Nails and Wire Nails.

The manufacturers of Wire Nails have encouraged the public to use Wire Nails, which are lighter than the Cut Nails heretofore and now used for the same work. This is certainly a move in the wrong direction, unless it can be shown either that the Cut Nails are unnecessarily heavy or that a Wire Nail has more holding power than a Cut Nail of the same length and weight. The excellence of the metal now used in both Cut and Wire Nails eliminates the danger of breaking. The danger in using light Nails is that they will pull out of the wood. The experience of years has established suitable sizes for the standard Cut Nails. The public has indorsed the decisions of the manufacturers. For instance, no reputable carpenter would think of fastening the boarding of a house with the Cut Nail which is made for box making, and if he did the owner of the house would forbid it. Experience and common consent have established the fact that the Cut Box Nails have not sufficient holding power for this use. And yet the Wire Nail manufacturers have encouraged the public to use Wire Nails not heavier than the Cut Box Nails for this same purpose. This is manifestly wrong, unless the Wire Nail has a greater holding power than the Cut Nail. It is the intention of the Cut-Nail manufacturers to satisfy the public that the exact reverse is the case; that the holding power of the Wire Nail is greatly inferior to that of the Cut Nail, weight for weight and length for length; that when Wire Nails are used they should either be larger in size or more in number than the Cut Nails ordinarily used for the same work; and that the manufacturers of Wire Nails, in attempting to make sale for their goods by advocating the use of lighter Nails than have heretofore been used, are encouraging the erection of flimsy structures, and thus the introduction of dangerous methods of construction. They further expect to show that if, in spite of their protest against this dangerous tendency, the public still insists upon the use of light Nails, it can procure greater efficiency, and for less money, by using light Cut Nails than by using light Wire Nails. The novelty of the Wire Nail has enabled its manufacturers to make and to obtain credence for claims which the manufacturers of Cut Nails know to be contradictory of the laws of mechanics, and the latter have invited the Wire-Nail manufacturers to submit those claims to scientific tests under impartial supervision and under equitable conditions, to be established by both parties. They cannot compel acceptance of the invitation or the attendance of the Wire-Nail manufacturers, but they will, in any case, have the tests made as arranged, open to such attendance and under the stated official superintendence and subject to official certification of the results.

From manufacturers of Wire Nails on the Pacific Coast we have the following communication, in which they refer to the effect of time on the holding power of Wire and Cut Nails respectively:

Our experience suggests that in case of Wire Nails and also Cut Nails the Nails should be in the wood for a fixed period

of time—say, for instance, take ten days apart, or more. Our carpenters all agree that the Wire Nail, after being in a period long enough to become a little rusted in the wood, is much harder to draw out than a Cut Nail under the same circumstances.

As we are so far off it will be impossible for us to take part in the test, but we do not think that a Wire Nail driven in and pulled out immediately would be a fair test against a Cut Nail.

Circulo Colon-Cervantes.

THIS GREAT METROPOLIS, which has probably more than any other city a large number of clubs, some of them fitted up in a really luxurious manner and supplied with all the comforts of this progressive age, had not a place which the Spanish speaking colony of New York could call its own, or where the members of the great Spanish-American family represented in this hemisphere by 40,000,000 of people, with an annual commerce of \$500,000,000, could meet and strengthen their friendly relations. To supply this need the Circulo Colon-Cervantes was started, and in addition to forming a casino where the colony can congregate, it is also with the purpose of commemorating in a worthy manner the fourth centenary of the discovery of America. The Circulo Colon-Cervantes has taken the first floor of 119 Fifth avenue, corner Nineteenth street, New York, where they have comfortably established themselves for the present. The two front rooms are heavily carpeted, the walls and ceilings being decorated in soft neutral tints, cream and gold predominating. The third room has an inlaid hardwood floor, and is furnished with large arm chairs in carved oak, upholstered in dark green leather. In the fourth room is the office and buffet. The draperies are in steel blue, and chandeliers in old gold, the illumination being from incandescent electric lights. The plate mirrors, clocks and *bric-à-brac*, judiciously placed, contribute much to the rich and homelike appearance which characterizes the rooms. The club being formed for social purposes all political or religious discussions are prohibited. All persons without regard to nationality, who speak Spanish, can be admitted if duly proposed by two members and passed upon favorably by the Board of Governors. The initiation fee previous to November 1, 1892, was \$10, with monthly dues of \$2. Non-residents residing farther than 25 miles from New York, one half of the above rates. After November 1 the initiation fee was increased \$10 for both resident and non-resident members. Non-resident strangers can obtain special tickets from members for visiting the club for a term of two weeks. This club was founded February 28, 1891; incorporated May 3, 1892; reorganized June 10, 1892, and inaugurated October 1, 1892. There are at present 259 resident and 14 non-resident members, with something over 30 who have been proposed and are only awaiting the regular course to be installed as full members.

The officers and governors of the Club we give below, together with the names

of the members, as far as the pressure on our space will permit:

President: JUAN N. NAVARRO,
Consul-General of Mexico.

Vice-President: ARTURO B. TOPETE,
Consul-General of Spain.

Treasurer: ANTONIO C. GONZALEZ.

Secretary: ANTONIO CUYAS Y. ARMENGOL.

Governors:

NICOLAS ESGUERRA.

ARTURO CUYAS.

SEVERO MALLET PREVOST.

ADRIAN MARTINEZ.

Among the members of the Club are the following, many of whom will be recognized as prominent business men, more or less closely identified with the trades to which *The Iron Age* is specially devoted:

JUAN APARICIO,
101 Pearl street.
JACOBO BAIZ,
Consul-General of Honduras.
Z. C. BARRIOS,
23 Coenties Slip.
C. C. BROWN,
80 Wall street.
CLIMACO CALDERON,
Consul-General of Colombia.
M. CAMACHO ROLDAN,
95 Broad street.
GERARDO CANTON,
Consul of Nicaragua.
JUAN M. CEBALLOS,
80 Wall street.
L. CONTANSEAU,
73 Broadway.
C. A. COOMES,
78 South street.
ALEX. I. COTHEAL,
Consul-General of Nicaragua.
CHARLES A. DANA,
Editor New York Sun.
ROBERT DEELEY,
136 Liberty street.
C. A. DELGADO,
Consul of Costa Rica.
JAMES DURAND,
9 South William street.
U. D. EDDY,
78 South street.
J. R. ESPRIELLA,
61 Liberty street.
CHARLES R. FLINT,
Consul-General of Costa Rica.
WALLACE B. FLINT,
Consul of Uruguay.
F. GARCIA,
Consul-General of Guatemala.
CARLOS G. GARMENDIA,
Cotton Exchange.
E. F. GARMENDIA,
87 Broad street.
G. H. GOSSLER,
Vice Consul of Brazil.
W. R. GRACE,
1 Hanover square.
WILLIAM HARPER,
44 Vesey street.
THEODORE HERRMANN,
97 Water street.
COM. W. H. T. HUGHES,
113 Wall street.
J. O. JIMENIS,
114 Wall street.
EUGENE KELLY, JR.,
Produce Exchange.
EDWARD KEMP,
68 William street.
GEORGE W. KEMP,
68 William street.
ROBT B. LYNCH,
52 Front street.
A. R. MAICAS,
104 John street.
JOSÉ MASERAS,
80 Wall street.

J. MENENDEZ,
171 Pearl street.
LUIS A. MEYER,
40 Stone street.
SAMUEL MOSBACHER,
105 Water street.
NARCISO M. MUNOZ,
68 William street.
E. R. OLCOTT,
35 Broadway.
CHAS. S. OSBORN,
45 Beaver street.
F. G. PIERRA,
81 New street.
J. S. PIZA,
247 West Forty-fifth street.
GERARDO POLO,
Vice-Consul of Colombia.
C. D. PRESTON,
6 Bowling Green.
EMILIO PUIG,
2-4 Stone street.
ANTONIO REYNES,
46 Exchange place.
MANUEL RIONDA,
80 Wall street.
CARLOS ROHL,
Consul of Argentine Republic.
JUAN SALA,
24 State street.
CARLOS A. SERRANO,
323 East Fourteenth street.
GEN. DANIEL E. SICKLES,
23 Fifth avenue.
GEORGE S. SICKLES,
23 Fifth avenue.
FRANCIS SPIES,
Vice Consul of Honduras.
A. D. STRAUS,
Vice-Consul of Nicaragua.
P. GIBERT THEBAUD,
87 Broad street.
J. F. TORAYA,
44 Broad street.
LAWRENCE TURNURE,
52 Wall street.
JOSE VALLE,
57 Broadway.
FRANCISCO L. VAZQUEZ,
Consul-General of Santo Domingo.
FRANCISCO P. VELASCO,
Consul of Peru.
REGINALD H. WARD,
683 Fifth avenue.
RAMON V. WILLIAMS,
35 Broadway.
EDUARDO WUPPERMANN,
35 Broadway.
J. M. ZAPATA,
21 West Ninety-seventh street.

Non Residents.

JUAN BALLESTER,
Havana, Cuba.
J. M. BORGES,
Havana, Cuba.
V. DE LA CALLE,
Matanzas, Cuba.
JOSE B. CALVO,
Washington, D. C.
WILLIAM CURTIS,
Savannah, Ga.
JUAN CUYAS,
Savannah, Ga.
MARQUIS DE ESTEBAN,
Havana, Cuba.
JULIO HIDALGO,
Havana, Cuba.
VICENTE M. JULBE,
Havana, Cuba.
MARQUIS DE LARRINAGA,
Havana, Cuba.
AUGUSTIN J. MERINO,
Philadelphia, Penn.
A. F. RAMIREZ,
Tegucigalpa, Honduras.
RODRIGO SAAVEDRA,
Spanish Legation, Washington, D. C.
RAMON O. WILLIAMS,
Consul-General U. S.,
Havana, Cuba.

The Scattergood Pay-Roll Book.

H. W. SCATTERGOOD, 23 Richmond street, Philadelphia, Pa., is offering a pay-roll book embodying some novel features. The sheets are held in place between stiff covers, 9½ x 13 inches, by being put upon pegs, holes in the sheets corresponding to the position of the pegs. A flat spring running across the end of the covers fastened by movable clasps locks the whole together. Thus sheets may be added or removed readily. A permanent sheet is ruled with headings as follows: "Reference No.," "Names," "Rate Per Hour," "Rate Per Week," "Date Employment Began," "Date Employment Ceased," "Address or Remarks." This gives a complete record of each employee opposite the name. Narrow slip sheets for keeping the time of employees, ruled for one week, are placed over the permanent sheet, leaving, however, the names exposed. The permanent sheet contains lines for 37 names and can be used for an indefinite time. The slip sheets are filed after each pay day for future reference. The maker states that this sheet can be adapted to suit any system which is in use.

Exports.

THE FOLLOWING are the exports of Hardware, Metals, Machinery and related goods from the port of New York for the week ending November 19, 1892. The total value of exports of all kinds is also given. It will be observed that this list is misleading in regard to Canada and Mexico, as most of the goods for those countries are shipped by rail:

ANTWERP.	
Total.....	\$215,942
Hardware.....	832
Electrical Material.....	729
Metal Goods.....	12
Carpet Sweepers.....	80
India Rubber Goods.....	300
Belting.....	450
Machinery.....	1,400
Sewing Machines.....	1,610
AMSTERDAM.	
Total.....	\$4,226
Hardware.....	47
India Rubber Goods.....	38
Manufactured Wood.....	40
AFRICA.	
Total.....	\$28,432
Cutlery.....	582
BRISTOL (ENGLAND).	
Total.....	\$15,244
Manufactured Wood.....	1,170
Stencils.....	161
BREMEN.	
Total.....	\$108,353
Typewriters.....	3,050
Plated Ware.....	284
Woodware.....	12
Lamp Goods.....	75
Musical Instruments.....	600
Manufactured Wood.....	934
Agricultural Implements.....	266
Machinery.....	1,246
Iron.....	60
India Rubber Goods.....	10
Hardware.....	1,611
Manufactured Nickel.....	60
Wagons.....	55
BRITISH AUSTRALIA.	
Total.....	\$55,634
Typewriters.....	4,405
Hardware.....	3,096
Manufactured Iron.....	1,721
Scales.....	33
Lamp Goods.....	125
Emery Wheels.....	90
Woodware.....	365
Agricultural Implements.....	590
Fire Arms.....	375
Nails.....	445
India Rubber Goods.....	50
Plated Ware.....	310
Pumps.....	120
Manufactured Wood.....	887
Cart.....	100
Clocks.....	218
Machinery.....	40
Paper Shells.....	45
Wringers.....	235
BRITISH POSSESSIONS IN AFRICA.	
Total.....	\$46,230
Pumps.....	340
Carriage Materials.....	803
Woodware.....	1,032
Carriages.....	516
Nails.....	852
Manufactured Iron.....	1,677
Sash Weights.....	189
Clocks.....	35
Cutlery.....	190
Fire Arms.....	30
Manufactured Wood.....	1,153
Mining Supplies.....	168
Hardware.....	3,281
India Rubber Goods.....	335
Agricultural Implements.....	5,037
Fuse.....	569
Lamp Goods.....	444
Trucks.....	162
Scales.....	176
Nails.....	50
Washers.....	194
Building Material.....	4,226

BRITISH EAST INDIES.		CHRISTIANIA.		FRENCH WEST INDIES.	
Total... \$5,964		Total... \$49,697		Total... \$29,138.	
Lamp Goods..... 290	Machinery..... 390	India Rubber Goods..... 311	Emery..... 375	Carriage Mate-rials..... 80	Carriages..... 592
Hardware..... 11	Agricultural Im-plements..... 205	Machinery..... 345	Car Materials..... 156		
Pumps..... 602	Manufactured Wood..... 86	Agricultural Im-plements..... 19	Typewriters..... 140	GENOA.	
Plated Ware..... 1,600		Clocks..... 612	Hardware..... 119	Manufactured Iron..... \$12	
Clocks..... 1,066			Plated Ware..... 67	GOTTENBURG.	
BORDEAUX.		CHILI.		Total... \$6,283.	
Total... \$38,024		Total... \$5,276		Hardware..... 96	Machinery..... 125
Agricultural Im-plements..... 411	Copper..... 21,600	Fire Arms..... 19	Scales..... 31	Crucibles..... 202	
BRUSSELS.		Electrical Mate-rial..... 33	Chalk Lines..... 11	GRENOBLE.	
Total... \$918		Carriages..... 86	Cutlery..... 219	Machinery..... \$3,006	
Sewing Machines. 360	Machinery..... 500	Brushes..... 12	Carriage Mate-rials..... 47	GLASGOW.	
BERWICK.		Machinery..... 650	India Rubber Goods..... 32	Total... \$281,287.	
Sewing Machines..... \$448		Cartridges..... 149		Sewing machines. 180	Wagon Material.. 1,185
BERLIN.		CENTRAL AMERICA.		Trunks..... 59	Carpet Sweepers. 36
Total... \$2,791		Total... \$49,064		Manufactured Wood..... 240	Ice Cream Freez-ers..... 23
Woodware..... 335	Typewriters..... 500	Hardware..... 638	Nails..... 234	Manufactured Iron..... 70	Lead..... 1,700
Cash Registers... 550	Typewriters..... 183	Manufactured Iron..... 1,015	Tacks..... 28	Bathtubs..... 130	Plated Ware..... 400
BRAZIL.		Machinery..... 660	Lamp Goods..... 551	Lamp Goods..... 124	Clocks..... 1,771
Total... \$194,554		Electric Goods... 1,371	Belows..... 23	Machinery..... 1,450	Machinery..... 784
Manufactured Iron..... 1,572	Trunk Material.. 463	Iron Safes..... 425	Sewing Machines. 357		
Nails..... 795	Hardware..... 4,631	Brushes..... 19	Scales..... 43	HULL.	
Woodware..... 73	Lamp Goods..... 2,403	Cutlery..... 430	India Rubber Goods..... 5	Total... \$429,196.	
Scales..... 247	Percussion Caps. 153	Trunks..... 9	Refrigerators... 137	Machinery..... 3,036	India - Rubber Goods..... 78
Fire Arms..... 608	Trunks..... 146	Granite Ware... 40	Bath Material... 8	Wind Mill..... 200	Brass Goods..... 300
Plated Ware..... 2,325	Cutlery..... 6,469	Sheet Iron..... 120	Tinware..... 78	Hardware..... 1,200	Agricultural Im-plements..... 165
Machinery..... 1,841	Cartridges..... 928	Clocks..... 63	Sandpaper..... 15	Manufactured Wood..... 127	Nails..... 30
Percussion Caps. 15	Clocks..... 914	Iron Pipe..... 176	Cart..... 130	Clocks..... 306	Ice Cream Freez-ers..... 4
Fish Lines..... 178	Electrical Goods. 3,507	Wheels and Axles 348	Iron Bars..... 23	Wringers..... 15	
Velocipedes..... 6	Twine..... 5,703	Horseshoes..... 55	Woodware..... 15	Grindstone..... 4	
Sewing Machines. 3,458	Nails..... 81	CUBA.		HAVRE.	
Wheels and Axles 2,000	Agate Ware..... 230	Total... \$589,148.		Total... \$218,871.	
India Rubber Goods..... 716	Pumps..... 409	Hardware..... 11,142	Machinery..... 90,787	Machinery..... 3,121	Hardware..... 1,153
Typewriters..... 6	Stove Board..... 21	Manufactured Wood..... 1,535	Carriage..... 103	Emery Wheels... 100	Sandpaper..... 86
Tinware..... 205	Needles..... 73	Lamp Goods..... 1,719	Spikes..... 216	Tinware..... 6	India Rubber Goods..... 402
Barrows..... 27	Sandpaper..... 10	Clocks..... 242	Carriage Material 52	Typewriters..... 825	Sewing Machines. 3,231
Tricycles..... 31	Razor Strops... 45	India Rubber Goods..... 1,014	Fuse..... 22	India Rubber... 1,400	Clocks..... 130
BRITISH WEST INDIES.		Derrick..... 559	Wheels..... 131	Crucibles..... 45	Electric material. 100
Total... \$302,337		Wheels and Axles 780	Iron Pipes..... 6,179	Agricultural Im-plements..... 38	Manufactured Iron..... 190
Hardware..... 868	Carriage Material 34	Velocipedes..... 29	Electrical ma-terial..... 2,220		
Manufactured Wood..... 244	Carts..... 194	Nails..... 1,123	Railroad Mate-rial..... 15,959	HAYTI.	
Steel Drums..... 1,030	Percussion Caps. 10	Ice Cream Freez-ers..... 21	Scales..... 2,276	Total... \$137,505.	
Trunks..... 247	Plated Matter 15	Bird Cages..... 13	Sheaves..... 82	Manufactured Iron..... 750	Lamp Goods..... 66
Fire Arms..... 112	Manufactured Iron..... 427	Cutlery..... 7,078	Sewing Machines. 2,391	Nails..... 92	Zinc..... 25
Store Trucks..... 22	Fuse..... 8	Brushes..... 105	Twine..... 290	Twine..... 31	Tinware..... 130
Woodware..... 279	Lamp Goods..... 627	Iron Tubes..... 2,313	Grindstones..... 44	Carriages..... 2,178	Woodware..... 100
Tinware..... 166	Wringers..... 20	Pumps..... 863	Wheelbarrows... 116	Machinery..... 231	Cutlery..... 91
Carriages..... 1,134	Scales..... 32	Saws..... 182	Sugar Wagons... 10,368	Sewing Machine Material..... 32	India Rubber Goods..... 20
Cutlery..... 11	Sewing Machines. 97	Sandpaper..... 8	Sandpaper..... 8	Carriage material 67	Well Wheels... 12
Electrical Mate-rial..... 198	Nails..... 223	Manufactured Copper..... 662	Manufactured Copper..... 662	Iron Safes..... 296	Roofing Material. 57
Twine..... 30	Pumps..... 75	Agricultural Im-plements..... 144	Trunk material.. 736	Saws..... 30	Wheelbarrows... 18
Machinery..... 795	Lamps..... 3	Trunk material.. 736	Tanks..... 2,600	Hardware..... 628	Grindstones... 57
Clocks..... 135	Watches..... 72	Iron..... 23	Steel..... 123	Wood..... 24	Spikes..... 19
Hoofing Slate... 470	Tricycles..... 13	Locomotive..... 9,500	Tinfoil..... 156		
Agricultural Im-plements..... 121	Cartridges..... 91	Cuspidors..... 66	Cages..... 104		
Spikes..... 10	Cart Wheels... 90	Water Closets... 228	Telephones..... 1,200		
Railroad Material 130	Hand Trucks... 5	Fire Arms..... 85	White Metal... 133		
Tanks..... 200	Brushes..... 6	Plumbing Goods. 347	Railroad Cars... 3,510		
India Rubber Goods..... 15	Axles..... 89	Nails..... 131	Manufactured Copper..... 1,914		
BREMERHAVEN.		Tin..... 419	Woodware..... 189		
Total... \$218		Copper Wire..... 80			
Wire Goods..... 141	Woodware..... 3	Manufactured Iron..... 20,163			
BOLIVIA.		DUBLIN.			
Clocks..... \$203		Total... \$380.			
BEYROUT.		Wire Mats..... 108	Pumps..... 200		
Total... \$345		Sandpaper..... 24			
WIND MILLS..... 45		DANISH WEST INDIES.			
CAPE DE VERDE ISLANDS.		Total... \$39,050.			
Total... \$3,128		Hardware..... 54	Agricultural Im-plements..... 5		
Woodware..... 133	Agricultural Im-plements..... 22	Manufactured Iron..... 81	Pumps..... 8		
Lamp Goods..... 31	Fish Lines..... 50	Lamp Goods..... 38	Manufactured Wood..... 31		
Hardware..... 21		Woodware..... 42	Carriage Mate-rials..... 4		
Twine..... 9		Iron Pipe..... 188	Hose..... 4		
CHINA.		Twine..... 25	Nails..... 68		
Total... \$42,008		Tinware..... 13			
Pumps..... 40	Miscellaneous Goods..... 50	Scales..... 15			
Steel Wire..... 225					
CORUNA.		DUTCH WEST INDIES.			
Hose..... \$179		Total... \$14,562.			
CONSTANCE.		Manufactured Iron..... 60	Caps..... 14		
Hardware..... \$456		Lamp Goods..... 9	Twine..... 15		
CANADA.		Trunks..... 36	Hardware..... 33		
Oxide Zinc..... 198		Agricultural Im-plements..... 36	Manufactured Wood..... 32		
COPENHAGEN.		Woodware..... 5	Clocks..... 96		
Total... \$75,618		Copper Goods... 25	Pumps..... 8		
Agricultural Im-plements..... 55	Manufactured Iron..... 175	Showcase..... 10	Sandpaper..... 14		
Crucibles..... 19	Manufactured Wood..... 219	Wagon Making Material..... 64			
Hardware..... 1,485	India Rubber Goods..... 644	ELBERFELD.			
Manufactured Steel..... 13	Cutlery..... 41	Machinery..... \$300			
Britannia Ware... 205	Wringers..... 18	ECUADOR.			
Wagons..... 136	Fire Arms..... 9	Total... \$4,864.			
Carpet Sweepers... 15	Machinery..... 210	Needles..... 56	Manufactured Iron..... 866		
Clocks..... 216		Sewing Machines. 20	Twine..... 88		
Whetstones..... 12		Cutlery..... 105	Hardware..... 92		
		Machinery..... 117	Trunks..... 8		
		Brushes..... 32			
		Sewing Machines. 24			

MEXICO.		STUTT GART.	
Total ... \$99,307.		Total, \$2,370.	
Hardware ... 4,103	Agricultural Im-	Typewriters ...	\$713
Manufactured	plements ... 846	STOCKHOLM.	
Wood ... 404	Clocks ... 18	Total ... \$12,186.	
Machinery ... 6,050	Nails ... 1,341	Machinery ...	\$1,074
Tinware ... 64	Woodware ... 60	STAVANGER.	
Electrical Goods ... 2,087	Cartridges ... 402	Total ... \$155.	
Scales ... 10	Wire Cots ... 1,100	Pumps ... 75 Hardware ...	20
Cutlery ... 1,047	Tricycles ... 24	SANTANDER.	
Nails ... 35	Sandpaper ... 129	Total ... \$831.	
Tacks ... 301	Trunk Material ... 45	SAN DOMINGO.	
Fuse ... 285	Crucibles ... 33	Total ... \$85,190.	
Iron Pipe ... 1,381	India Rubber	Hardware ... 319	
Fire Arms ... 1,240	Goods ... 235	Manufactured	
Yellow Metal ... 130	Iron ... 739	Wood ... 132	
Car Material ... 1,238	Railroad Material	Lamp Goods ... 108	
Well Wheels ... 5	Peru ... 169	Cutlery ... 56	
Copper Sheets ... 275	Typewriters ... 152	Sewing Machines ... 194	
Hose, Coils ... 82	Wagon Material ... 8	Railroad Cars ... 225	
Grindstones ... 79	Pumps ... 402	Percussion Caps ... 10	
Quicksilver ... 2,837	Boiler ... 174	Pipes ... 10	
Lead ... 24	Iron Safes ... 660	Wagons ... 8	
Steel ... 35	Carriages ... 90	Bushings ... 75	
Velocipedes ... 17	Percussion Caps ... 494	Iron Tanks ... 297	
Manufactured	Wringers ... 22	Grease ... 60	
Iron ... 14,820	Bicycles ... 500	Agricultural Im-	
Lamp Goods ... 847	Saws ... 15	plements ... 129	
Sewing Machines ... 455	Elevator ... 230	Carts ... 240	
MOSCOW.		SPANISH POSSESSIONS IN AFRICA.	
Total ... \$603.		Total ... \$26,695.	
MARSEILLES.		Sewing Machines ... 1,354	
Total ... \$83,065.		Hardware ... 15	
Agricultural Im-	Hardware ... 500	Agricultural Im-	
plements ... 369	Machinery ... 337	plements ... 79	
Crucibles ... 145		Woodware ... 3	
MADRID.		Grindstones ... 11	
Pumps ... \$350		TREBIZONDE.	
NEWFOUNDLAND.		Total ... \$643.	
Total ... \$36,820.		Sewing Machines ... 33 Hardware ...	
Lamp Goods ... 122	Manufactured	UNITED STATES OF COLOMBIA.	
Clothes Wringers ... 55	Wood ... 113	Total ... \$44,249.	
Electrical Mate-	Hardware ... 153	Hardware ... 1,506	
rial ... 530	Manufactured	Manufactured	
Saws ... 84	Iron ... 290	Wood ... 28	
Roofing Material ... 19	Roofing ... 175	Agricultural Im-	
Sewing Machines ... 65	India Rubber	plements ... 249	
Machinery ... 249	Goods ... 80	Pumps ... 150	
NOVA SCOTIA.		Brushes ... 27	
Total ... \$5,408.		Percussion Caps ... 41	
Manufactured	Manufactured	Twine ... 23	
Iron ... 145	Wood ... 10	Trunks ... 76	
Lamp Goods ... 16	Roofing Material ... 133	Shot ... 157	
Tinware ... 50	Machinery ... 750	Cutlery ... 1,504	
NAPLES.		Powder ... 785	
Agricultural Implements ... \$110		Sandpaper ... 81	
NEWCASTLE.		Carts ... 55	
Total ... \$5,469.		Car Material ... 1,700	
Machinery ... \$1,450		VOLO.	
PORTO RICO.		Pumps ... \$11	
Total ... \$78,659.		VENEZUELA.	
Manufactured	Steel Plates ... 83	Total ... \$104,648.	
Wood ... 24	Hardware ... 1,100	Hardware ... 618	
Nails ... 178	Manufactured	Manufactured	
Agricultural Im-	Iron ... 1,266	Mule Carts ... 166	
plements ... 624	Lamp Goods ... 67	Woodware ... 83	
Brushes ... 12	Scales ... 278	Manufactured	
Metal Goods ... 78	Machinery ... 1,823	Wood ... 52	
Nails ... 48	Wire Cots ... 130	Lamp Goods ... 38	
India Rubber	Sandpaper ... 15	Fishing Lines ... 29	
Goods ... 180	Wagon Material ... 37	Machinery ... 2,622	
Grindstones ... 47	Cartridge Shells ... 45	Manufactures of	
Refrigerator ... 19	Saws ... 56	Copper ... 257	
Manufactured	Woodware ... 63	Pumps ... 4	
Copper ... 27	Wheelbarrows ... 500	Scales ... 396	
Sewing Machines ... 66	Plated Ware ... 115	Cutlery ... 324	
Wagon ... 25	Cart ... 14	Nails ... 18	
Axles ... 108	Water Closets ... 13	India Rubber	
Iron ... 142		Goods ... 108	
ODESSA.		Brass Goods ... 318	
Total ... \$3,942.		Wheelbarrows ... 63	
Agricultural Implements ... \$2,562		Needles ... 35	
PORTSMOUTH.		Wheels and Ax-	
Hardware ... \$245		les ... 83	
PERU.		Grand total ... \$7,298,250.	
Total ... \$4,440.		Trade Items.	
Manufactured	Lamp Goods ... 30	C. E. JENNINGS & CO., 97 Chambers	
Iron ... 251	Iron Tank ... 900	street, New York, make special	
Machinery ... 300	Pumps ... 654	mention of some goods shown in	
Hardware ... 314	Sewing Machines ... 284	their catalogue recently issued. Among	
Electrical Goods ... 35	Cartridges ... 962	these are Auger Bit Sets and Auger Bits	
Nails ... 12	Belt ... 138	with straw and Stubb's finish, the finish	
Plated Ware ... 63	Oil Well Supplies ... 40	and workmanship on these goods being	
PORTUGUESE POSSESSIONS IN AFRICA.		something new. They have improved	
Machinery ... \$113		Steer's Bits both in workmanship and	
RUDKISBING.		finish and are making a complete line of	
Hardware ... \$15		Tang Chisels to correspond with their	
ROTTERDAM.		Socket Chisels. Goodell's Braces, Seigley	
Total ... \$296,589.		Smooth Planes, and special numbers of	
Hardware ... 25	Agricultural Im-	Hack Saws and Screw Drivers are brought	
Clothes Wringers ... 1,010	plements ... 12	prominently into notice. The fact is em-	
Machinery ... 114	Manufactured		
Carriages ... 418	Wood ... 50		
Pumps ... 17			
SETTLE.			
Machinery ... \$851			
SIAM.			
Total ... \$299.			
Manufactured	Woodware ... 2		
Iron ... 38			

phasized that the tools contained in their Tool Chests are of the best quality, regardless of the cost of the chest or of the assortment of Tools.

ON PAGE 105 of this issue will be found an advertisement of the W. Bingham Company, Cleveland, Ohio, calling attention to the Hackney and Falcon Bicycles, which are being offered for the season of 1893. The output of two large factories is controlled by the above company, and they will market their product through the Hardware trade.

WE ARE ADVISED that comparatively little delay and inconvenience have resulted from the late fire at Fayette R. Plumb's Edge Tool Works, Frankford, Philadelphia. An additional force of workmen were put on immediately, and most of the departments of the establishment put in nightly operation, so that the temporary deficit of stock is being rapidly supplied. No difficulty is experienced in filling current orders, and the goods which were damaged during the fire are being reworked as speedily as possible. A 200 horse-power Buckeye engine has been ordered to supplement the present power, which has been found inadequate with the addition lately made to the forge shop and polishing department. The new engine will operate the forge shop and new electric light dynamo.

WE HAVE RECEIVED from Miles, Strevell & Ulmer of Ogden, Utah, a copy of a very neat catalogue of 46 pages, which they have issued showing the line of goods handled by them as jobbers. The stoves shown include the Mason & Davis steel ranges, Garland ranges, the Fischer steel range, as well as the Iron Pennant, Loyal Pennant, the Royal Superior, the Rival, Mohawk and the Good Luck ranges. The cook stoves include the Omega, Good Luck and Mascot. The heating stoves, which occupy the latter half of the pamphlet, include the Art Garland, the Welcome Friend, the Improved Howe Ventilator, the Beatus, Tecumseh, the Oak Pennant, the Zenith, Ideal Garland, Aurora, Tribunal, Boom, Trix, Redwood and Baxter's Banner Camp Stove. In addition to stoves they carry a large line of Hardware, Tinware and Cutlery. The first page contains a calendar for 1893, and the book is well arranged, as well as attractive in appearance. The firm refer to their catalogue as the first thing of the kind issued by the jobbers in their section of country.

THE HARDWARE STORE OF H. M. SANDERS & Co., 27 Eliot street, Boston, was entered by burglars on November 22 and about \$700 worth of goods taken. The firm issue a postal card enumerating the articles taken as follows:

A double roll of Seal Grain Leather, lined with blue plush and containing about 150 Razors, celluloid handles, "Electric" marked on blade. Seven dozen Razors, marked "Bellamy, 27 Eliot street." No cases. A red Leather roll, lined with plush and containing 13 Razors; 25 dozen Pocket Knives, marked "Electric" on the blades; 25 Revolvers; 2 pair of Hair Clippers, marked "B. & S.," and about \$25 worth of plated Spoons and Forks.

The object of the card is to enable any to whom the goods may be offered for sale to recognize them and to secure the arrest of the offenders.

WE ARE ADVISED BY F. E. KOHLER & Co., Canton, Ohio, that they are adding a line of Lawn Rakes to their manufactured goods, which will be ready for the spring distribution, and they suggest that it will be to the interest of the trade to obtain their prices.

THE HARDWARE FIRM OF SUBLETT & BRUCE, Richmond, Va., has been dissolved by mutual consent, and Walter S. Sublett, who will continue the business, will assume all liabilities and collect all claims. This is a very old house, having

been established in 1844 by John T. Sublett & Bro., who conducted the business until May 1, 1883, when the name of the firm was changed to George W. Sublett & Co. Five years later it became Walter S. Sublett, who subsequently admitted R. E. Bruce as a partner.

THE MONTANA HARDWARE COMPANY, Lewiston, Mont., have been organized, and are now carrying on the Hardware and Agricultural Implement business formerly conducted by T. C. Power & Bro. The capital stock is \$25,000, paid in. The stockholders are as follows: T. C. Power, J. W. Power, N. M. Erickson, John Warr, Austin W. Warr and George J. Wiedeman.

IN THE ADVERTISEMENT of the Union Mfg. Company, New Britain, Conn., and 103 Chambers street, New York, in our last issue there was an obvious typographical error, as the column giving the list prices on their goods instead of being headed "list," was headed "discount." Our readers will please note the correction. It is given in proper form in this issue.

GENEVA TOOL COMPANY, Geneva, Ohio, have increased their facilities that they may be in a position to promptly supply their enlarging trade. They have recently added a new set of Fork rolls and other Fork machinery to their Fork shops. A Hoe plant has also been added to their works and has been equipped with modern machinery for the manufacture of Hoes. With these additions the company expect that their output this year will be about 50 per cent. beyond that of former years.

C. F. BALLARD announces under date of December 1, 1892, that the firm of White & Ballard, for the past 11 years conducting a wholesale and retail Hardware business at Washington C. H., Ohio, has been dissolved by mutual consent, Mr. White retiring from the firm and Mr. Ballard continuing the business at the old stand, where he will expend increased energy and enterprise toward enlarging the extensive trade heretofore enjoyed.

THE RAPIDITY with which goods are now turned out by the aid of modern machinery and under improved shop practice is forcibly illustrated in the manufacture of the Diamond G. Cycle Wrench, by the Gendron Iron Wheel Company, Toledo, Ohio. The Wrench weighs 5½ ounces, is 4½ inches long, having a special attachment known as the spoke grip. These Wrenches are made, we are advised, at the rate of one per minute, or 600 per day. The tools used for making the Wrench are eight milling machines of special design, and two drill presses.

BISSELL & MATHER, West Bay City, Mich., announce under date December 1 that on January 1 they will consolidate their business with that of the Geo. L. Mosher Hardware Company, the style of the new firm being Mosher, Bissell & Mather. Geo. L. Mosher will retire from active business. The new concern will do a wholesale and retail Hardware business and act as manufacturers' agents for various lines in Michigan.

THE AMERICAN BIT BRACE AND TOOL COMPANY, 122-126 Washington street, Boston, have succeeded the American Bit Brace Company. A complete change has been made in corporation, management and business methods, and the new organization are now manufacturing only those patterns of Braces and Tools which have, after thorough tests, proved entirely satisfactory, all others being abandoned. They are soliciting orders for immediate and future shipment.

JESSE R. SHARP, wholesale and retail dealer in Hardware, Stoves, Tinware, &c., Chippewa Falls, Wis., has just completed and is about to occupy his new two-story and basement solid brick building at 312

Bridge street, half a block above his present location, where he will be in a much better position to handle his country trade as well as to display retail stock. Mr. Sharp advises us that he commenced to call on small dealers in his vicinity about a year ago, and has since built up quite a good trade. The basement of the new building is 29 x 118 feet, all in one room. The first floor is divided into a salesroom, 29 x 68 feet, the rear part being the iron room, 29 x 50 feet, with an 18 foot ceiling, so that all the bars stand on end. On the second floor are the tin shop and storeroom, both being reached by a freight elevator.

SINCE THE DESTRUCTIVE FIRE which recently visited the plant of Dawes & Myler, New Brighton, Pa., the manufacturers have been making energetic efforts to place themselves in a position where some of the needs of their customers may be supplied. They have put roofs on four of their enameling buildings and the latter are all ready to light up. They have also engaged quarters in two different foundries, one in Beaver Falls and the other in Elwood City, in which they expect to cast from 40 to 50 Bathtubs per day. These they will enamel and finish at the above rate until they decide whether they will remain in their present location or make a change. The firm advise us that when they rebuild they will erect a plant double the capacity of the former one.

M. J. DEWALD of the Hardware firm, of Dewald Bros. & Co., 334 North avenue-Chicago, celebrated his 25 years' connection with the Hardware business by a banequet to some 30 of his friends on the evening of November 21. The table was spread in a hall in the second story of the building owned by the firm, and the guests fared sumptuously, the proceedings being enlivened by songs and short speeches complimentary to the host. In addition to friends not connected with the Hardware trade, the following gentlemen were present: Dewitt Van Evera of the Brand Stove Company; H. F. McGlachlin of the Sill Stove Works; J. C. Shirra, with D. S. Cook, wholesale Stove dealer; A. J. P. Moeckel of Markley, Ailing & Co.; Wm. Carperstein of the Chicago Stamping Company; Henry Fuhrmann and J. A. Ciliske, Hardware merchants.

JAS. H. ROBLEY, Eastern agent Pullman Sash Balance Company, has removed from 82 to 142 Chambers street, where he has new and improved samples of Pullman Sash Balances, and would be pleased to give his friends and the trade in general a cordial reception, and explain the merits of the goods which at the present time are being so liberally indorsed.

THE COLUMBIA GREY IRON COMPANY, Columbia, Pa., announce that for the convenience of the trade they have opened a sample and salesroom in New York at 35 Warren street, in charge of O. N. Stein. Mr. Stein is also selling agent for the New England Specialty Company, Cushman Mfg. Company, University Mfg. Company, Marietta Casting Company, Sanson Cutlery Company, Union Lock Company and Bless & Drake.

Cordage and Binder Twine.

TRAVERS BROTHERS COMPANY, 107 Duane street, New York, have recently purchased a five-story brick and brown-stone building on a plot of ground 50 x 100 feet adjoining their factory, 536 West Fifty-second street. It is their intention to add two stories to the building at once and devote the new property principally to the manufacture of Rope

and Binder Twine, their production of which will be largely increased. A few months ago the company began the manufacture of Manila and Sisal Rope, and now produces this class of Cordage in all sizes, ranging from $\frac{3}{16}$ inch in diameter to 6 six inches in circumference. With the new machinery ordered they will be able to make Rope up to 12 inches in circumference.

It is the policy of the company to distribute their goods among the trade rather than to be controlled by large concerns. The increase in their business has necessitated the above additions to their plant. Their advertisement, which appears in this issue, is of special interest to the Hardware trade. The company manufacture everything in Cordage, from a shoe thread to a hawser, and are disposing of their product to the trade. They have discarded the old tarred bands, and tie their Rope with pure Manila and Sisal white bands, untarred. They keep in stock a full assortment of coils and half coils of Rope for the convenience of customers, and dealers can now obtain their entire supplies in Cordage at their establishment.

Price-Lists, Circulars, &c.

FAYETTE R. PLUMB, Philadelphia, Pa.: Supplement No. 1 to catalogue 1892, illustrating new pattern Nickel-Plated and Silver-Bronzed Hatchets; also special assortment of Nail, Riveting and Farriers' Hammers. The supplement in dimensions and style corresponds with the catalogue to which it refers. Illustrations are given of assorted boxes of Hammers for retail trade, Octagon Pole Shingling and Half Hatchets, Nickel-Plated, and Octagon Pole Shingling and Half Hatchets, polished silver bronzed.

GENEVA TOOL COMPANY, Geneva, Ohio: Hand and Farming Tools. Their catalogue for 1892-3 is handsomely gotten up, giving illustrations of Hay, Grain, Straw, Header, Spading, Manure and Coke Forks, Weeding Hoes and Rakes, Potato and Manure Hooks, Steel and Malleable Rakes, Hoes, Hand Hay Rakes, Scythe Snaths, &c. In presenting this, their World's Fair edition, the company state that they are adding to their works the Hoe Machinery formerly owned by the Auburn Mfg. Company, and are also adding largely to their Fork Machinery.

THE GRAND RAPIDS REFRIGERATOR COMPANY, Grand Rapids, Mich.: Calendar for 1893. This is a wall calendar, the conspicuous feature of which is a portrait in colors of a strikingly beautiful young lady. Separate slips are furnished for each month. Each slip bears some reference to Columbian events, either connected with the history of Columbus or descriptive of the approaching World's Fair. A full page is devoted to a biographical sketch of the great discoverer. The Columbian idea is excellent and has been carried out by a masterly hand. On the back of the calendar views are given of the addition to the company's factory built in 1892, and of the old factory, erected in 1887.

C. E. JENNINGS & Co., 79 Reade and 97 Chambers streets, New York: Tool Chests. The portion of their catalogue relating to these goods has, for convenience' sake, also been bound separately, giving illustrations, descriptions and prices of Model Tool Holders, Goodell's Tool Set, Clark's Tool Chests, and C. E. Jennings & Co.'s Tool Chests. They call special attention to the quality of the tools in these chests.

NEW YORK HOLLOW WARE COMPANY, New York: Enameled, Tinned, Ground

and Plain Hollow Ware. Their catalogue shows illustrations of these goods, also of Sad Irons, Coal Hods, Chamber Pails, Ash Cans, Tea Kettles, Stove Boards, Coffee Mills, Elbows, Dampers, Stove Shovels, Dripping Pans, Agate and Granite Ware, &c. The company state that this catalogue includes all the latest additions made to their line of House Furnishing supplies, and call particular attention to their Nickel-Plated Tea Kettles.

T. McAVITY & SONS, St. John, N. B.: Plumbers', Engineers', Steam and Gas Fitters' Brass Goods, Iron Pipe, Malleable and Cast Iron Fittings, Plumbers' Earthenware, Pumps, &c.; also Tools for Engineers, Plumbers, Steam and Gas Fitters. The catalogue, No. 14, is bound in stiff covers, with 320 pages, liberally illustrated and with list prices. There are indexes to Plumbers' goods and Steam Goods; also to Rules, Tables, Weights, &c., under the heading of "Useful Information."

NASON MFG. COMPANY, New York: Trade sheets of discounts under date October 14, 1892, to apply to their catalogue of October, 1891. Also list prices of Wrought-Iron Pipe, Brass and Iron Valves and Fittings, and leaves from their catalogue showing some of the Nason specialties.

THE PIQUA HANDLE AND MFG. COMPANY, Piqua, Ohio: Farming Tool Handles, Garden Rakes, Piqua Natural Woodlock Furniture, Base Knobs, Electric Push Buttons, &c. In their 1893 catalogue illustrations are given of the above-mentioned goods, together with those of Chisel, Screw Driver, Brad Awl, File, Auger and Soldering Copper Handles; Coopers' Hoop Drivers, Round Mallets, Bung Starters, Towel Racks, Clothes Bars and Crosscut Saw Handles. Special attention is called to the Natural Wood Lock Furniture and variety Turnings by the makers, who state that, although this is a new departure for them, they are already manufacturing these goods extensively, and are in a position to take care of their rapidly increasing trade in this line.

DIAMOND CLAMP & FLASK COMPANY, Richmond, Ind.: Pattern Shop and Foundry Supplies. An illustrated catalogue relating to these goods calls attention to Diamond Snap Flasks, Diamond Clamp, Pattern Shop Supplies, Dowel Pins, Rapping Plates, &c. The Diamond Clamps can be adjusted to suit any flask in an instant, as it requires no wedges and avoids the necessity of looking for lost wedges. Flexible Wood Fillets are furnished in $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$ -inch sizes.

COVERT'S SADDLERY WORKS, Farmer, N. Y.: Neck Yoke Centers, Trimmed Neck Yokes and Specialties in Saddlery, Coach and General Hardware. Their illustrated price-list, No. 17, is issued under their new trade name as above, and contains a more complete line of Saddlery and General Hardware Specialties than previous lists. They call attention to their full and varied line of Trimmed Neck Yokes and Neck-Yoke Centers.

LEE-CLARK-ANDRESEN HARDWARE COMPANY, Omaha, Neb.: Specialties for winter trade. Their illustrated price current of winter goods shows Silver-Plated Ware in a large variety of designs—Carvers, Butcher and Hunting Knives, Sleigh Bells, Lanterns, Meat Cutters, Crosscut and Ice Saws, Axes, Clocks, Skates, &c.

It Is Reported—

That the Hardware store of L. W. Thomm & Co., 1470 Woodward avenue, Detroit, Mich., was broken into by burglars a short time since, and Revolvers and Cutlery to the value of \$34.50 stolen.

That Fred. Reiber & Bros., McKeesport, Pa., are making preparations to have their Hardware stock removed from Market street to Fifth avenue, where

they will occupy a large storeroom and basement.

That William McKee, Tinsmith, and H. O. Williamson, contractor, South Bethlehem, Pa., have organized a partnership and opened a Hardware store at 310 Brodhead avenue. The business will be conducted under the name of the Lehigh Valley Hardware Company. Mr. McKee has disposed of his Stove and Tin store to his brother, Robert McKee.

That Gus Koehrsen has decided to close out his stock of Hardware and Tinware at Martin's Ferry, Ohio, and devote his whole time and attention to Tin Roofing and the Heating Furnace for which he is general agent for several counties in Ohio and West Virginia.

That W. M. Dailey's Hardware store at Kennedy, N. Y., was burglarized on the 2d inst. About \$20 worth of goods were taken.

That Wilson & Winn are a new Hardware firm at Humboldt, Iowa.

That Danville, Ill., has a new Hardware store. The proprietor is W. B. Rickey.

That Moore & Weed's Hardware store at Lansing, Mich., was entered by burglars on the 5th inst., and \$100 worth of goods carried off by the miscreants.

That J. H. Grant has purchased the Hardware business of Frank Deitz, Williamsport, Pa., and will continue it at the old stand. Mr. Deitz has gone to Punxsutawney, where he will embark in the hotel business.

That Louis Brunson has opened a new Hardware store at Camden, S. C.

That a new Hardware store is soon to be opened in Hyde Park, Vt., by Mr. Dixon.

That the Hardware store of T. J. Kennedy at Hanover, Mich., was robbed on the 7th inst. A small amount of Cutlery was secured by the thieves.

That Rudow & Bruetz, Hardware dealers, Henderson, Minn., have dissolved partnership.

That J. P. Arnoldy, Hardware merchant, Elba, Minn., has been succeeded by William Gainey.

That Frank Childs, Hardware and Tin, Lakeport, Cal., has sold out his business.

That McMichael & Land, dealers in Hardware, Stoves and Tin, Oakdale, Pa., have purchased P. A. Moeller's stock.

That C. B. Meyers has commenced the Hardware business at Pittsburgh, Pa.

That the Hardware firm of Amann & Lesser, Tidouite, Pa., has become Amann & McDonald.

That the Hardware firm of Wilson & Agatz, Ellensburg, Wash., are closing out their stock.

That W. G. Evans of the Hardware firm of Evans & Evans, Roanoke, Va., tendered a supper to his employees on the 9th inst., at his residence on Church avenue. The affair was a very enjoyable one.

That O. C. Woolf, formerly a member of the Hardware firm of Wagner & Woolf, Elmira, N. Y., has commenced business under his own name.

That the explosion of a lamp in the Hardware store of N. H. Darrow, Clarendon, N. Y., on the 11th inst., caused a disastrous fire. The establishment was entirely destroyed.

That Way & Co., Hardware merchants, Hartford, Conn., have purchased the Hardware store of A. T. Fowler & Son of Willimantic.

That C. L. Jenness has opened a new Hardware store at Dover, N. H.

That in a large conflagration at Winston, N. C., on the 13th inst., the Hardware store of S. E. Allen was destroyed.

The Traveling Salesman.

FROM AN OHIO CORRESPONDENT
We have the following communication with reference to the proper treatment of Hardware travelers, and we take pleasure in laying it before our readers:

We all know the man who treats the traveling men as if they were robbers or pirates, or other enemies of society. The travelers all know him too well, for, unfortunately, his kind is not scarce. He belongs to the same family as the man that remains seated in a crowded street car while ladies are standing beside him, or occupies two seats by himself and his luggage while traveling on a railroad train, to the exclusion of others who have paid for the accommodations which he monopolizes. Every traveler has one or more of these creatures (they cannot be called men without insulting the genuine article) on his list, and calling on them is one of the disagreeable features of commercial traveling, for, from the peculiar position in which an agent presents himself before his customer, he is obliged to exercise a perfect control over his temper, and to submit to such treatment as his customers are disposed to give him.

Hardware buyers, as a rule, being gentlemen, treat all persons with whom they have dealings in the manner befitting their positions and professions, but as I remarked before, it is a sad fact that there are numerous exceptions, and it is of this class that I wish to say a few words, with the hope that this article may reach some of them, and more or less good result therefrom. No one but an experienced traveler can realize the amount of warmth that can accumulate under a man's collar when for the atrocious crime of inquiring in a gentlemanly manner whether he can sell some goods, or expressing a wish to show his samples, he is met with a curt and often insolent refusal, accompanied frequently by a very broad demand to leave the office. As a rule, he says nothing, and departs with as much grace as he can muster under the circumstances. He must bottle his wrath for his firm's interest; even at the sacrifice of his self-respect; nevertheless, he resolves to "get even," and very seldom fails to find an opportunity to do so in the end.

Occasionally the "bear"—the best comparison I can think of, but rather hard on Bruin—strikes a Tartar, and hears some very plain facts about himself, in language more expressive than elegant. It may give him food for reflection, but it will seldom do him any good, for as a rule he is invulnerable to such attacks, and is not sensitive enough to be affected by anything that can be said to him. Besides, he is always so conceited that no language, however plain, could convince him that he is ever anything but right.

We often hear the matter discussed and wonder what are the causes of such discourtesy and ungentlemanly conduct. He may be a confirmed dyspeptic, and in that case we can in a measure overlook his failings, for no man can be happy and have an unruffled temper with poor health. Another reason frequently given is that he may have risen from the "ranks" and uses every opportunity to show his authority. This is a satisfactory explanation in many cases, and all such can easily be distinguished. As for the remainder, about the only reason that can be assigned for their bad behavior is "pure, unadulterated cussedness," and for this latter class there is not much hope. They will continue to growl and grumble as long as they live, and if they could, would find fault with the undertaker at their funeral.

Now a word about the travelers. It is true that some of them are very exasper-

ating at times. They allow their energy to get the better of their tact. No man wants to buy goods when the stock is supplied, neither does he want to look at samples when he is otherwise engaged. I sometimes wonder, when I see some of the men who are endeavoring to sell goods on the road, what induced their firms to employ them, they are so devoid of tact, and, in fact, most of the essential qualifications of a successful salesman. No one can blame a buyer for repulsing a persistent "crank" of a traveler. However, take them as a class, and there cannot be found a more gentlemanly, intelligent, energetic, honorable body of men than the commercial travelers of the United States. I think the readers of *The Iron Age* will concur with me as to this assertion. They must be gentlemen, for policy, at least; honest, in order to gain and retain the confidence of their customers; energetic, to secure trade for their houses in the face of the fierce competition that prevails at the present time; careful observers of human nature, from necessity and force of habit; and in many cases they are men of wealth and social standing that will far outrank the upstart who takes malignant pleasure in insulting them because he knows he can do so with impunity, by reason of his position.

The traveling man who will come in the private office with a cigar in his mouth, and continues smoking without permission, deserves to be told, as I know several that have, "No gentleman will smoke in this office without permission."

A little tact will often save a traveler from a merciless snub and will go a long way towards making friends. On the other hand, the buyer who treats the travelers who visit him with due respect, in turn gains their friendship and respect, and very often is benefited in a material way by "tips" they may give him about intended rise in prices, &c. Therefore, if not for the sake of your own self-respect, do at least for your pocket book, be more considerate of those who come to you and save you a great deal of trouble, as you will realize if you will but think a little. Remember the old adage: "Vinegar never catches flies."

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Except in the line of artists' materials and other high-grade specialties particularly adapted to the holiday season trade, there has been merely a commonplace business of fair proportions. Until within the past few days weather conditions have permitted outdoor work to be carried on more liberally than usual during the latter part of November, and this favorable circumstance has, in turn, been reflected in a remarkably good movement for the season, not only of a few lines of prepared Paints, but of the leading staples employed largely by house painters. On the part of jobbers there is a tendency to extreme caution in the matter of placing orders for White Lead and kindred products of the corrodors, because of the low price of crude material and possibility of quotations for the Pigments being revised during the next month or six weeks. They are also very conservative about ordering other goods, since market conditions are bare cause to anticipate any upward movement in values. Small manufacturers, for similar reasons, are quite as indifferent and the general feeling is that there is more to gain than to lose by letting the future take care of itself.

White Lead.—The impression seems to be getting around that the National Lead Company will make a revision in their prices about January 1, if not sooner. The prevailing low prices for Pig Lead tend to foster this idea, and the growing competition of outside corrodors and manufacturers of various cheap mixtures, it is also pointed out, practically dictates a lower line of price for the carbonate or loss of trade. In some quarters a vague sort of intimation is thrown out that the management of the National Company have practically given it to be understood that they actually contemplate making some change ere long. For the present the old list and terms prevail on their products, and the fluctuations in quotations for other kinds are slight, but leaning slightly in buyers' favor.

Red Lead and Litharge.—The low grades employed by glass makers and in other lines of manufacture are meeting with fairly good sale, but high-class products are moving off in moderate quantities only, and very slowly at that. Prices have undergone no change, and, while rather dull, the market retains very steady tone.

Oxide Zinc.—New orders for domestic brands are coming in rather slowly at the moment, large consumers having their prospective requirements during the balance of the year well provided for and manifesting no anxiety about stock for delivery further ahead. However, the greater portion of current heavy production is passing into the channels of consumption on old contracts, and manufacturers generally adhere to the former line of prices for the various grades. Foreign brands are slow of sale, but importations are kept down closely to market requirements and prices remain without change.

Colors, &c.—Bulk goods used by grinders have undergone no change. Spot business is moderate and contracts for Ochres, Siennas, Venetian Red, &c., for future delivery, are of ordinary character, with about former prices the rule. Dry colors for painters' use have also been rather quiet, as have Oil colors generally, but prices for first quality goods remain very steady. Prepared Paints are selling in moderate quantities only, but quite as liberally as they usually do at this season of the year.

Miscellaneous.—Block Chalk has been very quiet, only small quantities having been received by steamer, while importers and consumers are considerably apart in their ideas regarding Rail shipments. Whiting and Paris White are held at former prices, but find rather slow sale. Prices for China Clay continue rather weak under the influence of large stocks, but otherwise prices for the general of Clays are steady, although business is quiet.

Oils and Turpentine.

For pretty much everything in the line of animal and vegetable Oils the tone of the market is strong. Lard Oil and competing lubricants are still affected by the excited condition of the market for raw Lard. That factor and alleged shortage in this season's supply of Cotton Seed serves to stimulate the market for the products of the latter, and this, in turn, has more or less bearing upon other Oils used chiefly in soap making. While it is more than probable that large buyers generally are well informed as to the strong features of the market, they manifest no anxiety to purchase largely in anticipation of future wants. To the contrary, the disposition is to proceed cautiously and avoid doing anything that would be likely to stimulate speculation. Taken as a whole, however, the movement of refined products generally makes a very good showing in the aggregate amount, and consumption does not appear to be affected a great deal by present prices.

Linseed Oil.—Business in this line has been rather slow. Large consumers, to all accounts, are well stocked and therefore very indifferent buyers, while from other quarters there is merely the routine moderate demand usually experienced at this season of the year. The cost of raw material has depreciated somewhat during the week and rumor has had circulation to the effect that one or more small Western manufacturers have solicited orders at slightly lower prices. As far as can be learned, however, neither city nor out-of-town brands are openly offered at less than 46¢ delivered here.

Cotton-Seed Oils.—There has been a slightly freer, but not really active trade in this line, and the market is stronger, if anything, at the present time than it was a week ago. Several hundred barrels of prime crude have changed hands at 30¢, about 1500 barrels Prime Summer Yellow at 35¢ @ 35½¢, and moderate quantities of other varieties at corresponding rates. The transactions were chiefly in comparatively small lots, but, along with the deliveries making on old contracts, they take up so much of the current product that grinders are in a position to practically dictate prices on all new business for the time being. The future of the market is shrouded in uncertainty, depending to a great extent upon the supply of seed and the course that operations in lard may take.

Lard Oil.—After reacting a few points, prices for Lard have taken another upshoot and the market for Lard Oil has correspondingly hardened, with values now higher than they have been at any previous time since the great speculative excitement in the market for hog products about five years ago. Consumers are using every substitute for Lard Oil that can be employed to any advantage, but their necessities absorb about all the product that pressers will venture to turn out at present cost and light supplies go hand in hand with exceedingly high prices at present. The future of the market is dependent almost wholly upon the outcome of the speculation in Lard and provisions. City prime has been sold at 85¢ and is now generally held higher. Lower grade went at 65¢ @ 70¢, extra No. 1 at 53¢ @ 57¢ and No. 1 at 45¢ @ 47½¢, according to quantity.

Miscellaneous.—Tallow and Neatsfoot Oil prices have undergone no radical change, but the market is decidedly stronger in tone and more active. Menhaden, Spermin and Whale are firm, with a very good distribution of the Pressed and Bleached products. A moderate business has been done in Cod, Olive and Coconut Oils at about former prices.

Spirits Turpentine.—Advices from the leading Southern points reflect no change of importance in the situation there. In the New York market receipts have been large enough to keep supplies full without causing any burdensome accumulation, and prices have fluctuated within narrow limits.

The securities of legitimate industrial enterprises always meet with favor in Wall street. The Stilwell-Bierce & Smith-Vaile Company in the middle of last week offered 5000 shares of their 8 per cent. cumulative preferred stock for subscription at par of \$100. A representative of Henry Clews & Co. informed a reporter of *The Iron Age* that by Saturday the stock was largely oversubscribed.

Thos. Crowe and Thos. J. Brown, formerly of the Joliet Works of the Illinois Steel Company, have accepted positions in charge of the Bessemer department and rail mill, respectively, at the works at Pueblo of the Colorado Fuel & Iron Company.

Improved Tin and Stove Pipe Former.

The Peck, Stow & Wilcox Co., Southington, Conn., and 27 Chambers street, New York, have just introduced an improvement in their stove and tin pipe formers, in the method of gearing as shown in the illustration here given. The difficulty before has been to insure the proper meshing of the cogs when the gripping rolls were separated for the introduction and forming of stock of varying thicknesses. Gears to run smoothly should mesh constantly to a certain depth, and the shape of the teeth must be accommodated to that depth. As made in the past, it was impossible to keep the mesh of the gears constantly at a uniform depth, inasmuch as the gripping rolls must be moved toward or from each other to admit the stock to be formed. The strain came upon the end of the teeth, if wide apart, occasioning frequent breakages, much annoyance and delay, besides caus-

table, or for an undercut or draft on pattern work. When used with a back saw it will gauge the depth for halving, dading, &c. There is a roll at the back to

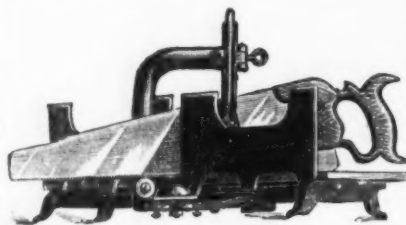
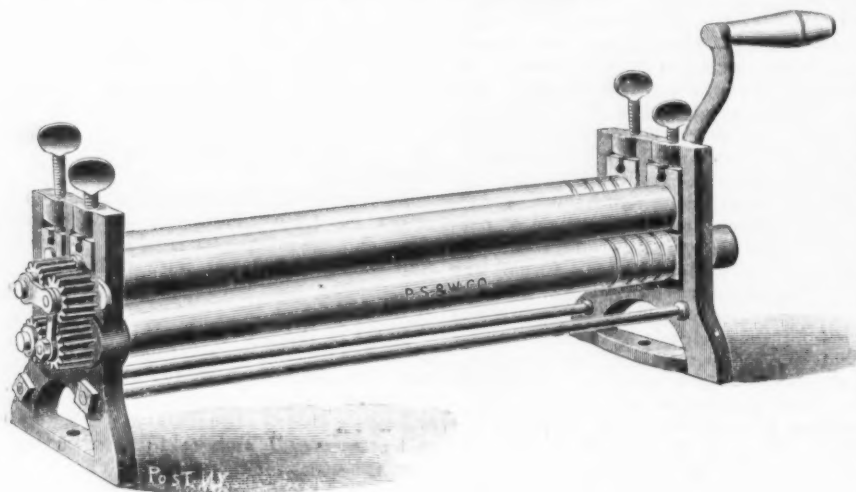


Fig. 2.—Miter Box, Back View.

prevent injury to the table, and being sharp shod will not slip on the bench. The box can be readily adjusted to different thicknesses of saw and is adapted to many grades of work. They are made in two sizes, 4 and 5 inch. The 4 inch box,



New Method of Gearing Formers.

ing the gear to rattle and turn with a jerk, instead of running smoothly, necessitating the employment of long and coarse teeth. In the former here shown the cogs attached to the gripping rolls do not articulate with each other, but into other gears, so hung that as the gripping rolls are moved toward or from each other the mesh of the gearing is unchanged, assuring smoothness and uniformity of action, and prolonged life for the cogs. The cogs are now wrought and machine cut, instead of cast iron as heretofore.

The Jacobs Miter Box.

The estate of M. W. Robinson, 79 Chambers street, N. Y., is offering the

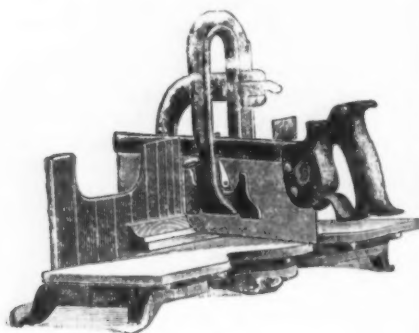


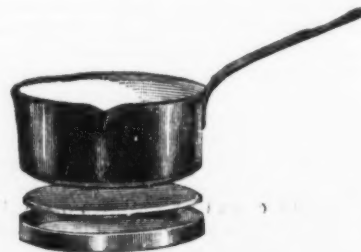
Fig. 1.—Miter Box, Front View.

miter box shown in Figs. 1 and 2. The tool is referred to by the makers as capable of being instantly set so as to saw any required angle and exactly square with the

being few parts, and it can be easily put in place. The power, it is claimed, can be increased for long drives. The fact is emphasized by the makers that the carrier has no cords or pulleys to break, or rubber springs to wear out. The carrier is sold outright and not leased.

Asbestos Stew Pan.

Stransky & Co., 265-267 Canal street, N. Y., are importing and introducing an asbestos stew pan, as here illustrated. It is of steel, enameled in blue and white. Between the body of the vessel and the false bottom a disk of asbestos is placed, which, as is well known, will not burn at any temperature, making this article, they claim, practically a double boiler. It is stated that it is impossible to burn or scorch food by this method. The pan in merchantable condition is apparently but



Asbestos Milk or Stew Pan.

one piece, the false bottom containing the asbestos lining being forced on to the main portion in course of manufacture. The cut shown as above explains the mode of construction.

Gem Paint Burner.

Burgess Soldering Furnace Company, Columbus, Ohio, are putting this article

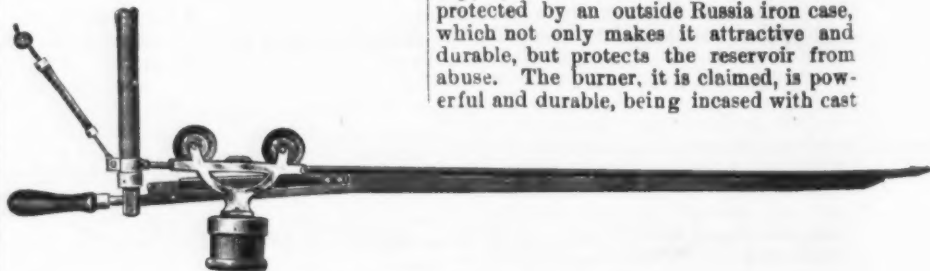


Gem Paint Burner.

on the market, as illustrated in the accompanying cut. The reservoir is made of copper, or IXXXXX tinned steel, and is protected by an outside Russia iron case, which not only makes it attractive and durable, but protects the reservoir from abuse. The burner, it is claimed, is powerful and durable, being incased with cast

Fast Mail Cash Carrier.

Mark & Mooney, Fremont, Neb., are introducing a cash carrier, as shown herewith. The cash car is propelled by aid of a steel lever, which affords great power and is beyond the risk of breakage. The arrangement of the carrier is simple, there



Fast Mail Cash Carrier.

iron, which prevents the brass parts coming in contact with the flame from crumbling or burning off. It is equipped with their improved air faucets and black rubber bulbs, and is considered by the makers more durable than the air pumps commonly used, and less liable to get out of order.

Box of Assorted Hammers.

Fayette R. Plumb, Philadelphia, Pa., is putting up assorted boxes of hammers, as illustrated herewith. It is a neat wooden box, containing 1½ dozen hammers of his best brand, and fully warranted. The assortment consists of one adze eye nail hammer No. 1, three of No. 1½, one of No. 2, three of No. 3 and two adze-eye farriers' hammer No. 3. Also one riveting hammer No. 1, two of No. 2, two of No. 3

wire, stiffness of the barb, or durability of the fence. The barb is made of half-oval wire, and its point is given a quarter turn which stiffens it and makes its strength equal to that of round wire. The half-oval barb having a flat surface bearing on the main strand, grips it tighter than does the usual round wire barb, hence fewer turns are necessary. The main strand is composed of No. 12½ wire, so that the fence maintains the standard strength. The lightness of the barb reduces the

clusive agents, and the Western trade is supplied from the new works of the company at Waukegan, Ill.

The Leonard Apartment-House Refrigerator.

Among the new styles of refrigerators now being brought out by the Grand Rapids Refrigerator Company of Grand



Box of Assorted Hammers.

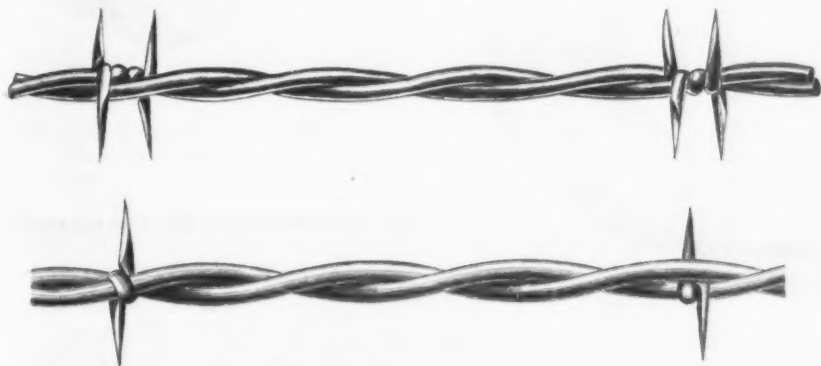
and 1 of No. 4. The idea is to give retail stores an assortment of the most salable hammers without obliging the merchants to buy a full box of each kind. The box is referred to as compact, not taking up much room on the shelf, and as having a neatly gotten up label showing just what the box contains.

Waukegan Barbed Fence Wire.

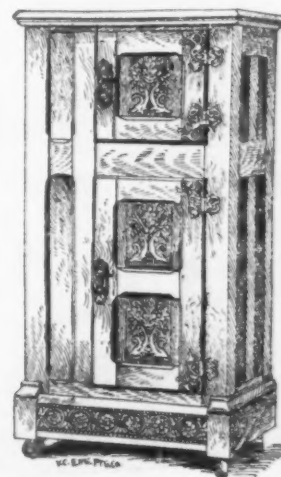
The Washburn & Moen Mfg. Company, 107 & 109 Lake street, Chicago, have just brought out a new pattern of barbed wire.

weight. The four-point wire, with barbs at the regular distance of 5 inches, runs 18½ feet to the pound, while the two-point runs 18½ feet to the pound. The Washburn & Moen Mfg. Company have superior facilities for drawing their wire accurately to gauge, so that these measurements may be depended upon to average as stated. Their patent process of galvanizing secures a union of the metal instead of a mere coating of spelter on the steel body, which would be liable to scale off. A sample of their galvanized barbed wire has been shown us which was in use 11 years and was almost as bright as when

Rapids, Mich., is one especially adapted to apartment houses, which is herewith illustrated. The ornamentation on this refrigerator is embossed work of very rich design. The hinges are of solid bronze, as also are the Leonard air-tight locks.



Waukegan Barbed Fence Wire.



The Leonard Apartment-House Refrigerator.

which is herewith illustrated. It is made in both two and four point, as shown. The object aimed at was to secure a form of barb which would be lighter than any hitherto made without sacrificing any of the essential points of strength of the

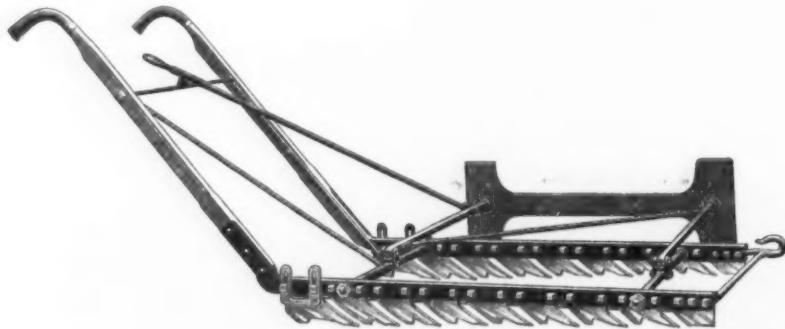
first put up, there being no visible trace of rust. The new Waukegan wire is secured by patents, domestic and foreign. The distinctive mark adopted for it is an illustration of the Indian chief "Waukegan." This new barbed wire is sold only to ex-

The wood work is solid ash, antique finish, while the interior is lined with zinc and the walls are charcoal filled. Three sizes are manufactured, of which the largest has two doors below.

Double Ice Marker.

William T. Wood & Co., Arlington, Mass., manufacturers of ice tools (Joseph A. Bogardus, 167 Chambers street, N. Y., selling agent) are introducing an improved double marker, with 22-inch swing guide, as here shown, having experimented at length to produce an implement free from the objections contained in such an article previously made. They refer to this tool as simple, compact, substantial and free

plied to the feet, bring the rear side portion of the hoofs to bear upon the springs, and thus the use of these shoes, it is claimed, prevents, and in many cases cures, stoving up of the shoulders, contraction of the sinews and muscles, sprung knees, stumbling, gravel, quarter cracks, contracted hoofs, corns, tender feet and other common disabilities. The rubber pads are made in form of pockets and fit on over the heel spring, having a thin portion overreaching the shoe body, which forms a



Double Ice Marker with Swing Guide.

from complications and unnecessary devices, and a machine that can be recommended. They allude to what can be accomplished with it as follows: One horse can cut two grooves, each 2½ inches deep, at a draft. The field can be marked out twice as fast as with a single marker, and with one-half the help. The grooves are sure to be perpendicular, and can be kept straight and true. The cakes of ice will be of uniform size, and the marker, weighing but 150 pounds, can be turned at the ends of the lines with ease. The adjustable depth gauge will cause both sides to cut exactly alike, an essential feature being that one set of teeth should cut no deeper than the other set.

The Dwyer Spring-Heel Horseshoe and Rubber Pad.

Stewart Brothers, Wichita, Kan., are putting on the market a horseshoe, as herewith illustrated. The heel springs of

cushion pad between the hoof and the springs. In securing the shoes to the feet, which is done in the usual way, the two rear nails at each side pierce the overreaching portion of the pad, which thereby secures them in position.

These shoes are made in two styles—one style of steel, split at the heel portion to form the springs, and one style of shoe iron, with steel springs welded on.

Daniel C. Dwyer, the inventor, is a practical horseshoer of 30 years' experience, and has, during this time, noted the repeated failures of the many attempts to produce something yielding in a practical shoe. Realizing the necessity of a simple and inexpensive shoe, one adapted to be attached like the common shoe and leave the frog free and the foot unincumbered, he has devised the above shoe.

The Perfection Feed Bag.

John P. Lovell Arms Company, 47 Washington street, Boston, are introduc-

is eating, through the openings provided for that purpose around the top of the basin. The makers claim that no feed can be wasted; that the horse can breathe with



Fig. 1.—The Perfection Feed Bag.

the bag on just as freely as he could with it off; that the animal cannot gormandize, being supplied with but a small quantity of feed at a time, and that the feed being above the mouth and nostrils, the horse

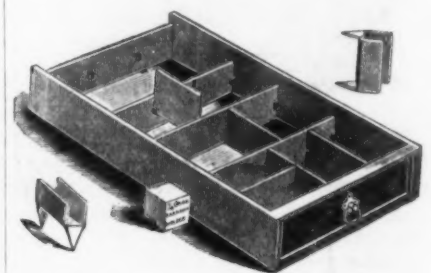


Fig. 2.—Sectional View of Feed Bag.

cannot breathe or slobber in it. The bag is referred to as being light and durable, and as holding about 8 quarts of grain.

Wells' Adjustable Partition Holders.

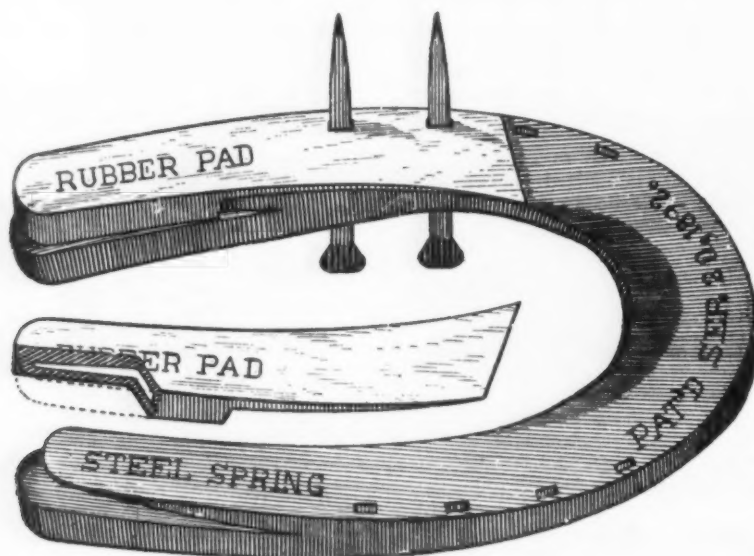
Wells Mfg. Company, 248-252 Tallman street, Syracuse, N. Y., are offering these holders, as herewith shown. They consist of sheet steel formed into shape, with the ends turned down and pointed for holding them in place. They are light



Wells' Adjustable Partition Holders.

and neat, the holders designed for ¾ inch partitions being ½ inch long and ½ inch high. In use the points are driven into the side of the drawer, as shown in the cut, and the partition slid into the groove of the holder. They are made in three sizes: for partitions ¾, ½ and ¼ inch in thickness.

Fuel, or combustible matter of any kind, sometimes becomes exceedingly valuable on a steamer in rough weather. The British steel steamship "City of Belfast," from East India ports, when she arrived at New York a few days ago, had burned up her masts, bowsprit and almost the entire wood work of the ship in making steam. Even the stairways, forecabin bunks and part of the cargo had to go.



The Dwyer Spring-Heel Horseshoe and Rubber Pad.

the shoe are made integral and on a plain at the upper surface with the shoe body and overreach the under heel portion, being of such form and tension as to yield only under the weight of the horse. The shoes are intended for the front feet of horses, and by their construction when ap-

plied to the feet, bring the rear side portion of the hoofs to bear upon the springs, and thus the use of these shoes, it is claimed, prevents, and in many cases cures, stoving up of the shoulders, contraction of the sinews and muscles, sprung knees, stumbling, gravel, quarter cracks, contracted hoofs, corns, tender feet and other common disabilities. The rubber pads are made in form of pockets and fit on over the heel spring, having a thin portion overreaching the shoe body, which forms a

The Cotner Dipper and Cup Handle.

Home Novelty Mfg. Company, Tenth and Walnut streets, St. Louis, Mo., are introducing the handle shown in Fig. 1.



Fig. 1.—The Cotner Dipper and Cup Handle.

The wires are arranged so as to hold a glass or cup securely, which provides a more pleasant drinking cup than one made of tin or other metal. The handle permits of the glass or cup being removed to clean or to replace another one. The ring on the wires is not required when making a dipper of a glass, as shown in Fig. 2. When using a cup the upper wire is pressed down

that of the ordinary chisel, it is operated in the same manner and is adapted to all mortising machines. It can be seen in operation at the office of the manufacturers, the Self-Cleaning Mortise Chisel Company, 164 Clark street, Chicago. E. B. Harang is

Cronk Steel Garden Rake.

Cronk Hanger Company, Elmira, N. Y., are putting this rake on the market, as

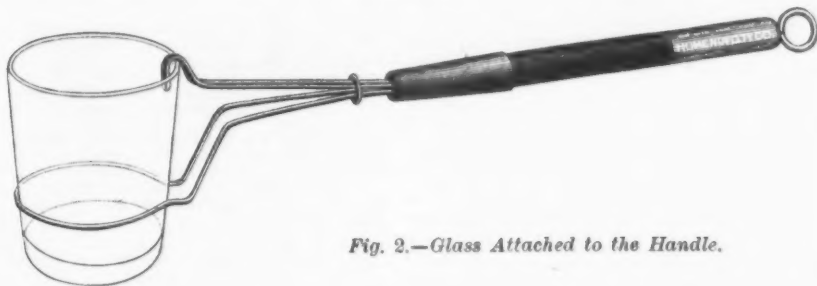


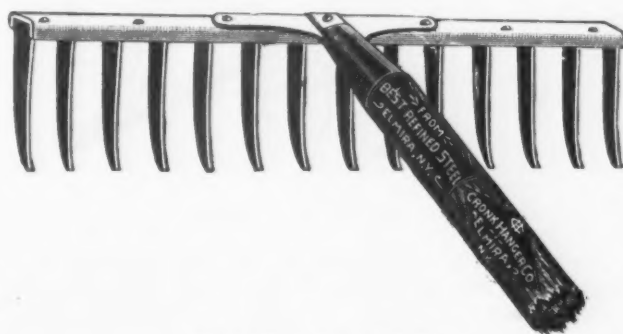
Fig. 2.—Glass Attached to the Handle.

between the lower wires as low as is necessary to properly secure the cup, especially if it be a low one, and is held in place by the ring. The point is made that glass dippers would have been made long ago if it were not for the fact that the handle would break off. By this arrangement such an objection is removed and a convenient method of using an agreeable vessel for drinking is provided.

Self-Cleaning Mortise Chisel.

The illustration presented herewith shows a new tool which has been invented for the purpose of cleaning a mortise at the same time that it is being cut. The tool consists of the chisel proper A, with a chip holder, B D, the extremity of which is pressed against the point of the chisel by means of a spiral spring below the point C. The chip holder is provided with a bevel on the inside end opposite the point D, which is so constructed that when the chisel strikes the wood the chip holder is forced open, thereby allowing the chip to run up between it and the chisel, where the chip is held in position by the pressure of the spring against it until the chisel strikes the wood the second time. The chip is then thrown out by coming in contact with the second chip, which itself remains in like position until thrown out by the third, and so on until the mortise is completed. Punching the

shown in the accompanying illustration. The head of the rake is of channel steel, on to which the teeth are riveted solid with Norway rivets. The teeth are of wrought steel, broad and thin, making them stiff and durable. It is explained that the teeth being thin do not take as much dirt as a thick tooth would, and that being wedge shaped they do not clog when used for lawn or leaves. The rake



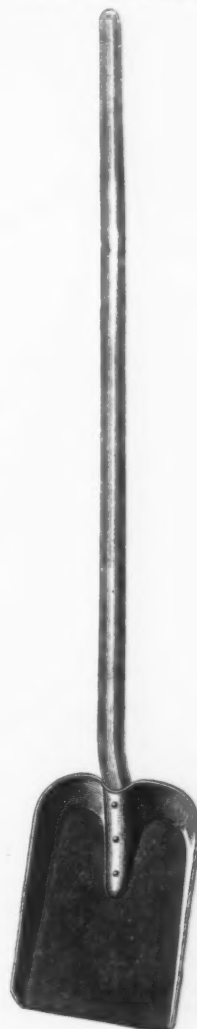
Cronk Steel Garden Rake.

has a malleable socket and is strongly braced.

Solid Steel Snow Shovel.

Underhill, Clinch & Co., 84 Chambers street, New York, are offering the trade

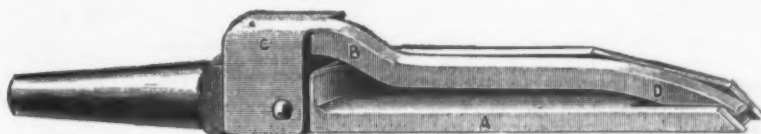
deep at the edge as at the back. This, combined with the size of the blade, which



Solid Steel Snow Shovel.

is 11 inches wide by 14½ long, gives it large carrying capacity. The blade is

bent to receive the handle, and so bent that the handle is flush with the back of the blade. The handle is flat on the sides and oval at the top and bottom, secured to the blade in a substantial manner, with three rivets on which there are washers. While being termed a snow shovel, the heavy material in the blade adapts it for ashes, stable use and like purposes. The blade is finished black, with ground edge.



Self-Cleaning Mortise Chisel.

chips out by hand is thus completely avoided, as the mortise is perfectly clean as soon as the chisel is withdrawn. The construction of the tool is precisely similar to

the snow shovel illustrated in the accompanying cut. It has a solid steel blade, extra heavy, which distinguishes it from those of lighter material, and is nearly as

The Pacific Mail Steamship Company is involved in litigation with the Panama Railroad Company respecting the terms of the contract between the two corporations. Judge Knox has granted an injunction forbidding the latter to transfer its business, as formerly agreed, to the Chilean Steamship Company, which, it is alleged, would be detrimental to the business of the Pacific Mail on the Western coast.

Wisdom Tooth Rakes.

Charles J. Healy, 106 Chambers street, New York, agent for the Wisdom Tooth Rake Company, is introducing a series of hand rakes, as illustrated in Figs. 1, 2 and 3. The garden and field rakes have a



Fig. 1.—Hoe Rake.

head of white oak 2 feet long, into which are driven pointed steel wire nails 5 inches in length, the teeth being curved to pass smoothly over the surface. The same curve enables the teeth to enter the ground on the principle of a shovel harrow, while the backward push cuts and pulverizes the earth with ease. A backward push without raising the implement unloads it in grass or leaves. The brace is formed of

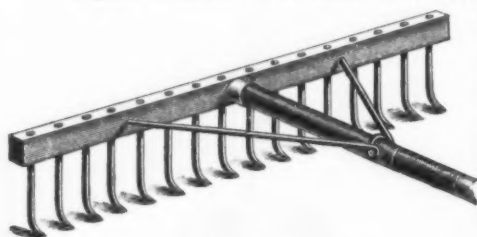


Fig. 2.—Garden Rake.

a continuous wire passing over the handle instead of through it, the ends being bent in the form of a staple and drawn back into the wood. Attention is directed by the manufacturers to the fact that the teeth, being of tough steel, will not bend or break in the ground, and that they are barbed for 1 inch from the head to give greater holding power. In addition to the

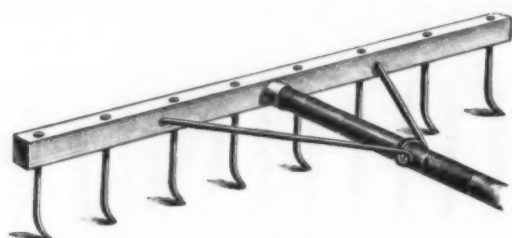


Fig. 3.—Field Rake.

rakes shown, they make a lawn rake similar to the garden rake, but having 18 teeth.

The American Screw Company.

The American Screw Company, Providence, R. I., have their new factory at Leeds, England, in successful operation. We are indebted for the following description of the plant to the Leeds *Mercury*:

The new establishment, which has been built on the site of what were known as Whitlam's Iron Works, is owned and conducted by the American Screw Company of Providence, R. I., U. S., under the title of the British Screw Company, Limited, chartered under the laws of Great Britain. The ground on which the works stand has an area of about 5 acres. The structure is 360 feet in length and has a frontage to Kirkstall road of 100 feet. It has been erected from plans prepared at Providence, and adapted to the requirements of the Leeds building by-laws.

The building, which is well lighted and conveniently arranged, has two floors, each with a superficial area of

about 1½ acres. The screw-making machinery is driven by a compound triple-expansion engine of 350 horse power, made by Messrs. Woodhouse & Mitchell of Brighouse; the boilers, of 400 horse-power capacity, are from the works of Messrs. Babcock & Wilcox, Limited, Glasgow, and they have attached to them mechanical stokers supplied by Messrs. Hodgkinson & Co., Manchester. The factory is lighted by electricity, there being throughout it 500 incandescent lamps and 45 arc lamps of 2000 candle power. The screw-making machinery has come from Providence. It has been running a couple of months, and at present about 12,000 gross of screws, of many different sizes, are being turned out per week. The heads of the various departments have also come from the home works in Rhode Island, but it is intended that they shall only remain here until English workers have been educated to fill their positions. It is, in fact, to be a thoroughly English manufactory so far as the work people are concerned. About 100, chiefly women and girls, have already found employment in the works, and it is expected that within a year from now some 500 or 600 will be at work. The raw material, consisting of iron wire, is at present supplied by Messrs. Ramsden, Camm & Co., Brighouse.

The first process in the manufacture, carried on on the ground floor, is that of cutting from the coil of wire, hanging at the end of the machine, the length required for the screw to be produced, and of putting the head upon it. The machine which does this, like all the others required for the subsequent operations, works automatically, and produces what are called "blanks" with remarkable celerity and regularity. From this department the partially formed nails are conveyed by a lift, capable of raising 6000 pounds, to the floor above, where they pass through the other operations, viz., turning the head, cutting the slot, and putting on the thread of the screw. After this the nails are thoroughly cleaned in

sawdust, the imperfect ones are thrown out, and the remainder are made up in one-gross packages, which are in turn made into packets containing three or six gross. They are then ready for the market. A considerable quantity of additional machinery is now on its way from America. When the whole has been set up, there will be a productive power equal to 10,000 gross of screws per day. The screws will be of great variety, ranging from ¼ inch to 8 inches in length. Every description of metal screw in the market will be turned out, including engineers' screws up to 3 inches in length, rivets, gate and shutter hooks and eyes, pointer hooks and eyes, guide hooks for cotton and woolen machinery, &c. There will be no fewer than 12,000 varieties. The works are to be enlarged almost immediately by the erection of wire mills and annealing and jappanning furnaces, and there will also be provided the means of tinning, galvanizing and electroplating. The screws are to be made in brass as well as in iron. In fact, nothing is to be lacking in order to enable the works to compete successfully with the largest and best appointed screw factories in the country.

They have even been provided with a siding connected with the Great Northern Railway, which will accommodate 150 wagons.

The factory is built upon American lines, and is a revelation to English workmen in the lightness of its construction, convenience of arrangement and the care shown for the comfort of the operators. The building is liberally supplied with windows, a feature which attracts people from long distances to satisfy themselves of the truthfulness of the reports about the new factory. While the works are purely American in design, the company are favoring the English traders as far as possible in purchasing their supplies.

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Current Hardware Prices.

NOVEMBER 30, 1892.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....\$ dos \$3.00, 33%
Excelsior.....\$ dos \$10.00, 50&10&5
North's.....\$ dos \$11.00, 11&11%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c

Anvils—

Eagle Anvil, \$ 15 @ 15&5%
Peter Wright's.....\$ 11 @ 11%
Arrattage's Horse shoe brand, \$ 11 @ 11%
Am. Wrought, Horse shoe brand, \$ 11 @ 11%
Trenton.....\$ 10 @ 10%
Wilkinson's.....\$ 10 @ 10%
Moore & Barnes Mfg. Co.....\$ 33%
Anvil Vise and Drill—
Millers Falls Co., \$18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, \$3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers.

Augers and Bits—

Douglas Mfg. Co.....75%
Wm. A. Ives & Co.....
Humphreysville Mfg. Co.....
Franch, Swift & Co. (F. H. Beecher)
P. S. & W. Co.....
Rockford Bit Company.....
Cook's, Douglas Mfg. Co.....55%
Cook's, N. H. Copper Co.....60%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jennings & Co., No. 10, extension
lip.....40%
C. E. Jennings & Co., No. 10, 32%
quarters, No. 5, \$5; No. 30, \$3.50, 25%
Lewis' Patent Single twist.....45%
Russell Jennings' Augers and Bits, 25&10%
Imitation Jennings' Bits.....60&60&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Car Bits.....60&60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L'Hommedieu Car Bits.....15&10%
Jornstnat Pat. Auger Bits.....20%
Jornstnat Bell-Hangers' Bits.....30&10%

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....45&10%
Syracuse, for wood.....30&30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, \$18; large, \$35, .55 @ 35&10%
Ives' No. 4, \$ dos \$60.....40%
Swan's.....40%
Steer's, No. 1, \$20; No. 2, \$25.....35%
Stearns' No. 2, \$45.....30%

Gimlet Bits—

Common.....\$ gross \$2.75 @ \$3.25
Diamond.....\$ dos \$1.25.....40&10%
Bee.....25&25&5%
Double Cut, Shepardson's.....45&45&10%
Double Cut, Cl. Valley Mfg. Co.....50&10%
Double Cut, Hartwell's, \$ gro.....\$5.25
Double Cut, Douglas's.....40&10%
Double Cut, Ives.....60&60&10%

Hollow Augers—

Ives'.....\$ 33% @ 33%
French, Swift & Co.....410%
Douglas's.....
Bonney's Adjustable, \$ dos \$48.....50%
Stearns' Expansive, each \$4.50.....50&5%
Ives' Universal Expansive, each \$4.50.....20%
Wood's.....25&25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....35&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10&15&10&5%
Watrous'.....25&25&10%
Snell's.....15&10&15&10&5%
Snell's Ship Auger Pat'n Car Bits.....15&10&15&10&5%

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common.....\$ gr. 85¢ @ 90¢
Awls, Should. Peg.....\$ gr. \$1.50 @ \$1.55
Awls, Pat. Peg.....\$ gr. 35¢ @ 36¢
Awls, Shouldered Brad.....\$ gr. \$1.30 @ 1.40
Awls, Handled Brad.....\$ gr. \$2.50 @ \$3.00
Awls, Handled Scratch.....\$ gr. \$4.00 @ \$4.50
Awls, Socket Scratch.....\$ dos \$1.10 @ \$1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands, \$7.00 @ \$7.50
First qual., other brands.....\$ 6.50 @ 7.00
Second quality.....\$ 5.50 @ 6.00

Axle Grease—See Grease, Axle.

Axles—

No. 1.....\$ 3.40 @ 4.40, No. 2, 5.40 @ 6%
Nos. 7 to 14.....\$ 6.00 @ 10%
Nos. 15 to 18.....\$ 4.75 @ 5%
Nos. 19 to 22.....\$ 7.00 @ 7%
Concord Axles, loose collar.....\$ 4.40 @ 6%
Concord Axles, solid collar.....\$ 5.40 @ 7%
National Tubular Self Oiling.....\$ 3.40 @ 4.40

Bag Holders—See Holders, Bag.

Balances—

Spring Balances.....40%
No. 2000 20 30
Chatillon, \$ dos.....\$0.80 0.95 1.75 net
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel.....\$ 3 3/4¢
Iron, Steel Points.....\$ 3 3/4¢

Basins, Wash—

Standard Fiberware, No. 1, 10 1/4 inch, \$2;
12 inch, \$2.25 13 1/4 inch, \$2.75; 15 inch,
\$3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82, 50&10%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33%
Beaters—Egg—
Dover.....\$ dos \$1.20 @ \$1.50
Duplex (Standard Co.).....\$ dos \$1.25
Rival (Standard Co.).....\$ dos \$1.00
Duplex Extra Heavy (Standard Co.).....\$ dos \$3.50
Bryant's.....\$ gross \$14.00
Double (H. & R. Mfg. Co.), \$ gro, No. 0
\$12.00; No. 1, \$15.00; No. 2.....\$30.00
Easy (H. & R. Mfg. Co.).....\$ gro \$12.00
Triple (H. & R. Mfg. Co.).....\$ gro \$16.50
Spiral.....\$ gro \$4.25 @ \$4.50
Improved Acme (H. & R. Mfg. Co.).....\$ gro \$9.00
Paine, Diehl & Co.'s.....\$ gro \$24.00
Silver & Co.....\$ dos \$5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2.....20%
Bells—Cow—
Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky, Durham.....70&10%
Dodge, Genuine Kentucky.....70&10%
Texas Star.....50&10&50&10&5%

Door—

Gong, Abbe's.....33% @ 10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10&50%
Crane, Taylor's.....25&10%
Crane, Brooks'.....50&10&2%
Crane, Cone's.....10%
Crane, Connell's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated.....net
Lever, R. & E. Mfg. Co.'s.....25&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—

Light Brass.....70&10&70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33% @ 10%
Globe Cone's Patent.....25&10&35%

Miscellaneous

Call.....45&50%
Farm Bells.....\$ 3 3/4 @ 3 1/2
Steel Alloy Church and School Bells.....40%

Bellows—

Blacksmith's.....60&10&60&10&5%
Molders.....40&10&50%
Hand Bellows.....40&10&50%

Belting, Rubber—

Common Standard.....70&10&75&5%
Standard.....70&5&70&10%
Extra.....60&10&60&10&5%
N.Y.B.&P. Co., Carbon.....60%
N.Y.B.&P. Co., Diamond.....60%
N.Y.B.&P. Co., Para.....40%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire

Stoddard's Lightning Tire Upsetters.....15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.,
see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron, 50&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Bolts—

Carriage, Machine, &c.—
Com. list June 10, '84.....75&10&5&80%
Genuine Eagle, Norway, list Oct. '84.....80&80&10%
Phila. pattern, list Oct. 7, '84.....75&10&80%
R. B. & W., old list.....70%
Machine, list Jan. 1, 1890.....80&80&5%
Bolt Ends, list Jan. 1, 1890.....75&10&75&10&5%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list).....65&10%
Ives' Patent Door Bolts.....60&10&60&10&5%
Wrought Barrel.....70&70&10%
Wrought Square.....70&70&10%
Wrt Shutter, all iron, Stanley's.....60&10%
Wrt Shutter, Brass Knob.....40&10%
Wrt Shutter, Sargent's list.....60&10%
Wrt Sunk Flush, Sargent's list.....60&10%
Wrt Sunk Flush, Stanley's list.....60&10%
Wrt B. K. Flush, Co' mr.....65&10%

Stove and Plow—

Stove.....60&10&60&10&5%
Plow.....60&10&50&60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65&65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84.....80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33% @ 35%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33% @ 35%

Borax—

Per lb.....10% @ 10%
Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per box.....2%
Braces—
American Bit Brace and Tool Co.
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 12, 25, 28.....60&10&5%
Nos. 13, 26, 36, 37.....\$1.12 to \$1.25
Ball Braces, net.....\$1.12 to \$1.25
Amidon's
Barker's Imp'd Plain.....75&10&80%
Barker's Imp. Nickel.....65&10&70%
Barker's Imp. Nickel.....75&10&80%
Eclipse Ratchet.....60%
Globe Jawed.....40&40&10%
Corner Brace.....40&40&10%
Universal, 8 in., \$2.10; 10 in.....\$2.25
Buffalo Ball.....\$1.10 @ \$1.15
Barber's
Nos. 10 to 16.....50&10%
Nos. 20 to 33.....50&10&50&10&10%
Nos. 40 to 65.....50&10&50&10&10%
Saxton's
Barker's Imp. Polished.....75&10&80%
Barker's Imp. Nickel.....65&10&70%
Ratchet, Polished.....60&10&60%
Ratchet, Nickel.....40&10&50%
Buffalo Ball.....net, \$1.10 @ \$1.15
Bartholomew's
Nos. 25, 27 and 30.....50&10&60&5%
Nos. 117, 118, 119.....70&70&5%
Common Ball, American.....\$1.00 @ \$1.10
Frays' Genuine Spofford's.....50&5&50&10%
Frays' Nos. 70 to 130, 81 to 125, 207 to 414
Ives' New Haven Novelty.....70&70&5%
New Haven Ratchet.....60&5&60&10%
Barber Ratchet.....60&5&60&10%
Barber's.....60&5%
Spofford.....60&5&60&10%
Cagood's Ratchet.....40&10&50%
P. S. & W. Co., Peck's Patent.....60%

Boxes, Wagon—

Per box.....2%
Braces—
American Bit Brace and Tool Co.
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 12, 25, 28.....60&10&5%
Nos. 13, 26, 36, 37.....\$1.12 to \$1.25
Ball Braces, net.....\$1.12 to \$1.25
Amidon's
Barker's Imp'd Plain.....75&10&80%
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Barker's Imp. Nickel.....75&10&80%
Eclipse Ratchet.....60%
Globe Jawed.....40&40&10%
Corner Brace.....40&40&10%
Universal, 8 in., \$2.10; 10 in.....\$2.25
Buffalo Ball.....\$1.10 @ \$1.15
Barber's
Nos. 10 to 16.....50&10%
Nos. 20 to 33.....50&10&50&10&10%
Nos. 40 to 65.....50&10&50&10&10%
Saxton's
Barker's Imp. Polished.....75&10&80%
Barker's Imp. Nickel.....65&10&70%
Ratchet, Polished.....60&10&60%
Ratchet, Nickel.....40&10&50%
Buffalo Ball.....net, \$1.10 @ \$1.15
Bartholomew's
Nos. 25, 27 and 30.....50&10&60&5%
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Common Ball, American.....\$1.00 @ \$1.10
Frays' Genuine Spofford's.....50&5&50&10%
Frays' Nos. 70 to 130, 81 to 125, 207 to 414
Ives' New Haven Novelty.....70&70&5%
New Haven Ratchet.....60&5&60&10%
Barber Ratchet.....60&5&60&10%
Barber's.....60&5%
Spofford.....60&5&60&10%
Cagood's Ratchet.....40&10&50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf, plain.....65&70%
Regular, list.....60&10&70&10%
Shelf, fancy.....70&70&10%
Sargent's list.....70&70&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Hen's Self-Inch.....9 10 9x11
Basting, \$ per doz.....\$4.50 5.50 6.50
New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorous.....\$ dos \$12, 50%

Buckets, Well—

Galvanized—
Hill's.....\$ dos 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad.....\$ dos 14 qt. \$4.25 @ \$4.50
Helwig's Flat Iron Sand.....\$3.75
Helwig's Wired Top.....\$ 4 @ \$4.00

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butcher's.

Butts—

Brass—
Wrought Brass.....80&80&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33% @ 10%
Cast Brass, Loose Joint.....33% @ 10%
Cast Iron—
Fast Joint, Narrow.....50&10&5&60%
Fast Joint, Broad.....50&10&60%
Loose Joint, Japanned.....50&10&60%
Loose Joint, Jap. with Acorns.....75&75%
Mayer's Hinges.....810%
Loose Pin, Acorns, Japanned.....75&75%
Loose Pin, Acorns, Japanned, Plated Tips.....50&50&10%

Wrought Steel—

Fast Joint, Narrow.....50&10&5&60%
Fast Joint, Broad.....50&10&60%
Loose Joint, Japanned.....50&10&60%
Loose Joint, Jap. with Acorns.....75&75%
Mayer's Hinges.....810%
Loose Pin, Acorns, Japanned.....75&75%
Loose Pin, Acorns, Japanned, Plated Tips.....50&50&10%

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt.....5% @ 6%
Burke's One Prong, Blunt.....5% @ 6%
Burke's Two Prong, Blunt.....7% @ 8%
Burke's One Prong, Sharp.....6% @ 7%

Can Openers—See Openers, Can.

Caps—

Percussion—
Hicks & Goldmark's and Union Metallic
Cartridge Co. \$ 1000
F. L. Waterproof, 1-10's.....35&37%
E. R. Trimmied Edge, 1-10's.....47&50%
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47&50%
Musket, Waterproof, 1-10's.....50&50%
G. D.....27&30%
S. B. Genuine Imported.....45%
Eley's E. B.....56&58%
Eley's D Waterproof, Central Fire.....\$1.00

Primers—

Berdan Primers, \$1.00.....2%
R. L. Caps (for Sturtevant Shells) \$1.00.....2%
All other Primers, \$1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and
File, list January 28, 1891.....25%

Carpet Stretchers—

See Stretchers, Carpet.

Carpet Sweepers—

See Sweepers, Carpet.

Cartridges—

Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&2&2%
Cent. Fire, Military and Sporting.....15&2&2%
Blank Cartridges, except 22 and 32 cal.,
additional 10% on above discounts.
Blank Cartridges, 22 cal., \$1.75.....2%
Blank Cartridges, 32 cal., \$3.50.....2%
Primed Shells and Bullets.....15&2&2%
R. B. Caps, Round Ball, \$1.75.....\$2.00
R. B. Caps, Con. Ball, Swgd., \$2.00.....\$2.25

Casters—

Bed.....\$ 55 @ 55&10%
Plate.....\$ 60 @ 60&10%
Shallow Socket.....\$ 40 @ 40%
Deep Socket.....\$ 40 @ 40%
Yale Casters, low list.....45%
Yale, Gem.....70%
Martin's Patent (Phoenix), 45&10&50&10%
Payson's Anti-Friction.....70%
Payson's Truck.....60%
Giant Truck Casters.....60&10%
Stationary Truck Casters.....60&10%
Socket Truck Casters.....50%
Gwinner's Common Sense.....50%
Gwinner's Hercules.....50%

Cattle Leaders—

See Leaders, Cattle.

Cement—

Victor Elastic.....5 pails \$ 5 @ 5%

Chain—

Trace, Wagon and Fancy Chains.
List revised Oct. 15, 1892.....60&60&10%
American Coil, in lots.....
3-16 3-16 3-16 3-16 3-16 3-16
\$7.00 5.30 4.45 3.80 3.65 3.50 3.40 3.35
Less than cash lots, add 4%
German Coil, list July 12, 1892.....60&60&5%
German Halter Chain, list July 12, 1892.....60&60&5%
Covert Halter.....60&2%
Covert Traces.....35&2%
Covert Heel Chain.....50&2%
Onelda Halter Chain.....60&60&5%
Galvanized Pump Chain.....\$ 5 @ 5%
Jack Chain, Iron.....80&10%
Jack Chain, Brass.....80%

Chalk—

White, case lots, \$ gr 50¢; small lots, 52¢
Red, case lots.....\$ gr 67¢; small lots, 72¢
Blue, case lots.....\$ gr 75¢; small lots, 80

Chalk Lines—See Lines.**Chisels—****Socket Framing and Firmer**

P. S. & W.	
New Haven.	
Witherby.	
Mix.	75¢ & 75¢ 10¢ & 5¢
Ohio Tool Co.	
Douglas.	75¢ & 75¢ 5¢
Buck Bros.	30¢
Merrill.	60¢ 10¢ & 80¢ 10¢ & 5¢
L. & I. J. White.	30¢ & 30¢ 5¢

Tanged and Miscellaneous.

Tanged Firmers.	40¢ 10¢ & 50¢
Butchers'.	\$4.75 & \$5.00
Spear & Jackson's.	\$5 to \$
Buck Bros.	30¢
Cold Chisels.	15¢ 16¢

Chucks—

Beach Pat.	each, \$8.00.	20¢
Morse's Adjustable, each.	\$7.00, 20¢ & 20¢ 5¢	
Danbury.	each, \$6.00, 30¢ & 30¢ 5¢	
Syracuse, Balz Pat.		35¢
Graham Patent.		35¢ 5¢
Skinner's Patent Chucks.		33¢ 5¢
Combination Lathe Chucks.		40¢
Universal Lathe Chucks.		40¢
Independent Lathe Chucks.		40¢
Drill Chucks.		15¢
Union Mfg. Co.		\$3.50, 25¢
Victor.		40¢
Combination.		40¢
Universal.		40¢
Independent.		40¢

Churns—

Tiffin Union, each, 5 gal.	\$3.25; 7 gal.	\$3.75; 10 gal.	\$4.25.
McDermaid Star Barrel Churn, each	6 gal.	\$2.60; 10 gal.	\$2.75; 15 gal.
	\$3.00; 20 gal.	\$3.25.	

Clamps—

R. I. Tool Co.'s Wrought Iron.	25¢
Adjustable, Cincinnati.	15¢ 10¢
Adjustable, Hammers.	15¢ 15¢ 5¢
Adjustable, Stearn's.	30¢ 30¢ 10¢
Stearns' Adjustable Cabinet and Cor-	
ner.	30¢ 30¢ 10¢
Cabinet, Sargent's.	70¢ 10¢
Carriage Makers', P. S. & W. Co.	40¢ 10¢
Eberhard Mfg. Co.	40¢ 5¢ 40¢ 10¢
Warner's.	40¢ 10¢ & 40¢ 10¢ 5¢
Saw Clamps, see Vises, Saw Filers'.	
Carpenter's, Cincinnati.	25¢ 10¢

Cleavers, Butchers'—

Bradley's.	25¢ 30¢
L. & I. J. White.	20¢ 5¢
Beatty's.	40¢ 40¢ 5¢
New Haven Edge Tool Co.	40¢
P. S. & W.	35¢ 5¢ 35¢ 10¢
Foster Bros.	30¢
Schulte, Lohoff & Co.	40¢ 40¢ 5¢

Clips—

Norway, Axle, 1/4 & 5-16.	55¢ 5¢ 5¢
2d grade Norway Axle, 1/4 & 5-16.	65¢ 5¢
Superior Axle Clips.	60¢ 5¢ 70¢
Norway Spring Bar Clips, 5-16.	60¢ 5¢ 5¢
Wrought Iron Felice Clips.	5¢
Steel Felice Clips.	5¢
Baker Axle Clips.	25¢

Cloth and Netting, Wire

—See Wire, &c.

Cockeyes—

Cocks Brass—	50¢
Hardware list.	60¢ 2¢

Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Chapman Mfg. Company.	50¢ 10¢ & 60¢
Medford Paper Goods Co.	40¢ 10¢ & 50¢
Embossed, Gift, Pope & Steven's list.	30¢ 10¢
Leather, Pope & Steven's list.	40¢
Brass, Pope & Steven's list.	40¢

Combs, Curry—

Fitch's.	50¢ 10¢ & 50¢ 10¢ 10¢
Rubber, per doz.	\$10.00.
American Curry Comb Co.	33¢ 5¢ 40¢
Kohler's Magic Oscillating.	5¢ doz., \$2.00
Kohler's Humane.	5¢ doz., \$1.75

Compasses, Dividers, &c.

Compasses, Callipers, Dividers, 70¢ 70¢ 10¢	
Bemis & Call Co.	
Dividers.	65¢
Compasses.	50¢ 5¢
Callipers, Wing and Inside or Outside.	50¢ 5¢
Callipers, Double.	60¢
Callipers, Call's Patent Inside.	30¢
Excelsior.	60¢
J. Stevens & Co.'s.	25¢ 10¢
Starrett's.	25¢
Spring Callipers and Dividers.	25¢ 10¢
Lock Callipers and Dividers.	25¢
Combination Dividers.	25¢

Coopers' Tools—

—See Tools, Coopers'.

Cord—

Common.	Sash—	10¢ 11¢
Patent, good quality.	12¢ 12¢ 5¢	
White Cotton Braided, fair.	24¢ 24¢ 5¢	
Common Russia Sash.	12¢ 12¢ 13¢	
Patent Russia Sash.	14¢	
Cable Laid India Sash.	21¢ 21¢ 5¢	
India Cable Laid Sash.	12¢	
Silver Lake—		
A quality, White, 50¢	25¢	
A quality, Drab, 55¢	25¢	
B quality, White, 30¢	10¢	
B quality, Drab, 35¢	10¢	
Sylvan Spring, Extra Braided, White, 34¢		
Sylvan Spring, Extra Braided, Drab, 39¢		
Semper Idem, Braided, White.	27¢ 28¢	
Egyptian, India Hemp, Braided.	26¢	
Massachusetts, White.	26¢	
Samson—		
Braided, White Cotton, 50¢.	30¢ 30¢ 5¢	
Braided, Drab Cotton, 55¢.	30¢ 30¢ 5¢	
Braided, Italian Hemp, 55¢.	30¢ 30¢ 5¢	
Braided, Linen, 80¢.	30¢ 30¢ 5¢	
Tate's Cotton Braided, White.	28¢ 10¢	
Ossawaun Mills—		
Braided, Giant, White, 30¢.	30¢	
Braided, Giant, Drab and Fancy, 30¢		
Braided, Crown, White, 30¢.	50¢	
Braided, Crown, Drab and Fancy, 30¢		

Wire Picture—

Braided or Twisted.....80¢ & 80¢ 15¢

Corkscrews—See Screws, Cork.**Corn Knives and Cutters**

—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.)	40¢
Blake's Pattern, 5 doz.	\$2.00
Turner & Seymour Mfg. Co.	50¢
Acme, 5 gross, \$30.	
Japanned.	50¢
Nickel Plated.	10¢

Cradles—

Grain.	50¢ 5¢ 2¢ 50¢ 10¢ & 2¢
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Crayons—

White Crayons, 5 gross.	7¢ 5¢
D. M. Stewart Mfg. Co., Metal Work-	
ers', 5 gross, \$2.50.	25¢
D. M. Stewart Mfg. Co., Rolling Mill,	
5 gross, \$2.50.	25¢

See also Chalk.

Crow Bars—See Bars, Crow.**Curry Combs—**

—See Combs, Curry.

Curtain Pins—

—See Pins, Curtain.

Cutters—**Meat—**

Dixon's, 5 doz.	40¢ 5¢
Nos.	1 2 3 4 5
	\$14.00 \$17.00 \$19.00 \$20.00
Woodruff's, 5 doz.	40¢ 5¢
Nos.	100 150
	\$15.00 \$18.00
Hale's Pattern, 5 doz.	70¢ 70¢ 5¢
Nos.	11 12 13
	\$27.00 \$33.00 \$45.00
American.	1 2 3 4 5
Nos.	\$5 \$7 \$10 \$25 \$50 \$60
Enterprise.	10 12 22 32 42
Nos.	\$3 \$2.50 \$4 \$6 \$15
Great American Meat Cutter.	30¢ 30¢ 5¢
Nos.	112 116 118 120 122
	\$2.00 \$2.75 \$3.00 \$3.50 \$4.00
Miles' Challenge, 5 doz.	45¢ 45¢ 10¢
Nos.	1 2 3
	\$22.00 \$30.00 \$40.00
Home No. 1, 5 doz.	\$36.00.
Draw Cut, each:	
Nos.	5 2 6 8
	\$50 \$75 \$90 \$225
Beef Shavers (Enterprise).	30¢ 10¢ 30¢
Little Giant (P. S. & W. Co.)	50¢
Chadborn's Smoked Beef Cutter, 5 doz.	\$65.00

Tobacco

Champion.	20¢ 10¢ 30¢
All Iron.	50¢
Nashua Lock Co.'s, 5 doz.	\$18.00, 50¢ 5¢
Wilson's.	55¢
Sargent's.	50¢ doz., \$24.00, 55¢ 10¢
Acme.	50¢ doz., \$20.00, 40¢

Washer—

Smith's Pat.	50¢ doz., \$12.00, 20¢ 10¢ 10¢
Johnson's.	50¢ doz., \$11.00, 33¢ 5¢
Penny's, 5 doz., Pol. #14; Jap'd, #16, 55¢	
Appleton's.	50¢ doz., \$16.00, 60¢ 10¢
Bonney's.	50¢ doz., \$10.00, 25¢ 10¢
Cincinnati.	25¢ 10¢

Dampers, &c.—

Dampers, Buffalo.	40¢ 10¢
Buffalo Damper Clips.	40¢ 10¢
Crown Damper.	40¢
Excelsior.	40¢ 10¢

Diggers, Post Hole, &c.—

Samson post Hole Digger, 5 doz.	\$34.00
Fletcher Post Hole Augers, 5 doz.	\$30.00, 20¢
Eureka Diggers.	50¢ doz., \$11.50 & \$12.50
Lead's.	50¢ doz., \$8.00 & \$9.00
Vaughan's Post Hole Auger, 5 doz.	\$8.50 & \$9.50
Kohler's Little Giant.	50¢ doz., \$18.00
Kohler's Hercules.	50¢ doz., \$14.00
Kohler's Invincible.	50¢ doz., \$12.00
Kohler's New Champion.	50¢ doz., \$8.00
Scheidler.	50¢ doz., \$18.00
Ryan's Post Hole Diggers.	50¢ doz., \$24.00
Cronk's Post Bars, 5 doz.	\$90.00
Gibb's Post Hole Digger.	50¢ 5¢ 50¢ 10¢
Imperial.	50¢ doz., \$15.00
Shimer's Hollow Handle.	50¢ doz., \$24.00, 50¢

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Springs—**

—See Springs, Door.

Drawers.

Money, 5 doz.	\$18 & \$20
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Drawing Knives—

—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.	each \$1.75
Blacksmiths' Self-Feeding, each	\$7.50, 20¢
Erast, P. S. & W.	40¢ 10¢
Breast, Wilson's.	30¢ 5¢
Breast, Miller's Falls.	each \$3.00, 25¢
Breast, Bartholomew's.	each \$2.50
Ratchet, Merrill's.	20¢ 20¢ 5¢
Ratchet, Ingersoll's.	25¢
Ratchet, Parker's.	20¢ 20¢ 5¢
Ratchet, Whitney's.	20¢ 10¢
Ratchet, Weston's.	20¢ 25¢
Ratchet, Moore's Triple Action.	25¢ 30¢
Ratchet, Curtis & Curtis.	30¢
Whitney's Hand Drill, Plain, \$1.00;	
Adjustable, \$12.00.	20¢ 10¢
Wilson's Drill Stocks.	10¢
Automatic Boring Tools.	\$1.75 & \$1.85
Chicopee Automatic Drill.	30¢ 10¢

Twist Drills—

Cleveland.	50¢ 10¢ 10¢
Diamond, W. & B.	50¢ 10¢ 10¢
Graham's Pat. Groove Shank.	50¢ 10¢ 10¢
Horse.	50¢ 10¢ 10¢
New Process.	50¢ 10¢ 10¢
Standard.	50¢ 10¢ 10¢
Syracuse (Meta list).	50¢ 10¢

Drill Bits or Bit Stock

—See Augers and Bits.

Drill Chucks—See Chucks.**Dripping Pans—**

—See Pans, Dripping.

Drivers, Screw—

Douglas Mfg. Co.	30¢ 20¢ 10¢
Dixon's.	50¢
Buck Bros.	30¢
Stanley R. & L. Co.'s	
No. 64, Varnished Handles.	65¢ 10¢
No. 86.	70¢ 10¢
Sargent & Co.'s	
No. 1, Forged Blade.	60¢ 10¢ 10¢
Nos. 2, 40 and 60.	60¢ 5¢ 10¢ 10¢
P. S. & W.	70¢
Knapp & Cowley	
No. 1.	60¢ 20¢ 70¢
No. 2.	60¢ 10¢ 10¢ 70¢ 5¢
No. 3.	60¢ 5¢ 60¢ 10¢
Nos. 4 and 60, Acme and Ideal.	50¢ 5¢

Stearns'.

Stearns'.	50¢ 10¢ 5¢
Gay & Parsons.	35¢
Champion.	25¢ 10¢
Clark's Pat.	30¢ 30¢ 5¢
Crawford's Adjustable.	30¢
Ellrich's Socket and Ratchet.	25¢ 25¢ 10¢
Alard's Spiral, new list.	25¢
Kolb's Common Sense.	50¢ doz., \$1.00.

Syracuse Screw-Drivers.

Screw Driver Bits.	30¢ 30¢ 5¢
Screw Driver Bits, Parr's.	50¢ doz., \$6.25
Eray's Hol. H'dle Sets.	No. 3, \$12.00, 45¢
P. S. & W.'s All Steel.	50¢
Cincinnati.	25¢ 10¢
Brace Screw Drivers.	25¢ 10¢
Buck Bros' Screw Driver Bits.	27¢ 5¢
Goodell's Automatic.	50¢
Mayhew's Black Handle.	50¢
Mayhew's Monarch.	45¢ 10¢
C. T. Williamson Wire Novelty Co.	50¢

Egg Beaters—See Beaters, Egg.**Egg Poachers—**

—See Poachers, Egg.

Electric Bell Sets—

—See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF.

Kegs, 50 gr.	46 gr.	150 gr.	FFF.
14 kegs, 50 gr.	5¢	5¢	25¢
14 kegs, 50 gr.	4¢	5¢	25¢
14 kegs, 50 gr.	5¢	5¢	3¢
10 kegs, cans, 10 in case.	6¢	6¢	5¢
10 kegs, less than 10 in case.	10¢	10¢	7¢ 5¢

Enameled and Tinned Ware—See Ware, Hollow.**Escutcheon Pins—**

—See Pins, Escutcheon.

Escutcheons—

—Same dis. as Door Locks.

Expanded Metal—

List No. 5.

Lathing.	10¢
Fencing, Painted Sheet.	30¢
Netting, Painted Sheet.	20¢
Door Mats, Galvanized.	25¢
Window Guards, Painted.	15¢
Tree Guards, Painted.	15¢

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, 5 doz.	\$1.00.
Van Sand's Screw Pat.	15¢ gr., 60¢ 10¢
Van Sand's Old Pat.	15¢ gr., 55¢ 10¢
Austin & Eddy No. 308.	5¢ gr., \$1.00
Security Gravity.	5¢ gr., \$9.00
Zimmerman's.	50¢

Faucets—

Fenn's.	40¢
Bohren's Pat. Rubber Ball.	25¢
Fenn's Cork Stops.	33¢ 5¢
Star.	60¢
Frary's Pat. Petroleum.	60¢
B. & L. B. Co.	
West's Lock, Open and Shut Key.	50¢
Star, Metal Plug, new list.	40¢
Lockport, Metal Plug, reduced list.	60¢
Metallic Key, Leather Lined.	60¢ 10¢
Cork Lined.	60¢ 10¢ 10¢
Burnside's Red Cedar.	50¢
Burnside's Red Cedar, bbl. lots.	50¢ 10¢
John Sommers'.	
Peerless Best Block Tin Key.	50¢
IXL, 1st quality, Cork Lined.	50¢
Diamond Lock.	50¢
Perfection, Fla. Red Cedar.	50¢
Goodenough Cedar.	50¢
Boss Metallic Key.	50¢
Reliable Cork Lined.	50¢
Western Pattern Cork Lined.	50¢

Self Measuring

Enterprise, 5 doz.	\$36.00.
Lane's 5 doz.	\$

Halters—

Covert's, Rope, Jute.....	60&10&10&25
Covert's, Rope, 7-in. Jute.....	70&25
Covert's, Rope, 3-in. Hemp.....	50&25
Covert's, Rope, 3-in. Hemp.....	40&25
Covert's, Hemp Horse and Cattle Tie.....	50&25
Covert's, Jute Horse Ties.....	70&25
Covert's, Jute Cattle Ties.....	70&10&25
Covert's, Adj. Web Halters.....	35&5&25
Covert's, Saddle Works Halters.....	33&5
Covert's, Saddlery Works Horse and Cattle Ties.....	33&5

Hammers—**Handled Hammers—**

Maydole's, list Dec. 1, '85.....	25&10&35
Buffalo Hammer Co.....	50&10
Humason & Beckley.....	50&10
Atha Tool Co.....	40&10
C. Hammond & Son.....	40&10
Payette R. Plumb.....	40&10
Artisan's Choice, A. E. Nail.....	40&10
Regular Y. & P. A. E. Nail.....	50
Horsehoe Turning Hammers.....	50
Other Hammers.....	50&10
Cheney's Claw.....	40&10
Cheney's Machinist's & Riveting.....	50&5
Hartford, Nail Hammers.....	40&10
Hartford, Machinists, &c.....	50&5&10
Magnetic Tack, Nos. 1, 2, 3, 1.25, 1.50 & 1.75.....	30&10
Nelson Tool Works.....	40&10
Warner & Nobles, new list.....	25&10
Peck, Stow & Wilson.....	40&10
Sargent's.....	40&10

Heavy Hammers and Sledges—

3 lb and under.....	75&10&75&10
3 to 5 lb.....	85
Over 5 lb.....	10&10
Wilkinson's Smiths.....	10&10

Handcuffs and Leg Irons—

See Police Goods.

Handles—**Cross-Cut Saw Handles—**

Atkins' No. 1 Loop, Spr., 28¢; No. 3, 18¢; No. 6, 15¢; No. 2 and No. 4, Reversible, 18¢.	
Champion.....	15¢

Iron, Wrought or Cast—

Door or Thumb.....	0 1 2 3 4
Nos.....	0 1 2 3 4
Per doz.....	0.90 1.00 1.08 1.35 1.50
Roggin's Latches.....	40&10&10
Bronze Iron Drop Latches.....	70¢
Jap'd Store Door Handles, Suts, 1.42; Plate, 1.10; no plate, 0.88.....	net
Barn Door, per doz.....	14.00
Chest and Lifting.....	70&70&10

Wood—

Saw and Plane.....	40&10&50
Hammer, Hatchet, Axe, &c.....	40&40&5
Bradawl.....	gr 2.00
Hickory Firmer Chisel, large.....	gr 5.00
Hickory Firmer Chisel, ass'd.....	gr 5.00
Apple Firmer Chisel, large.....	gr 6.00
Apple Firmer Chisel, ass'd.....	gr 3.00
Socket Firmer Chisel, ass'd.....	gr 5.00
Socket Framing Chisel, ass'd.....	gr 5.00
J. B. Smith & Co's Pat. File.....	50¢
File, assorted.....	gr 2.75
Auger, assorted.....	gr 5.00
Auger, large.....	gr 7.00
Pat. Auger, Ives.....	30&10
Pat. Auger, Douglass.....	gr 1.25
Pat. Auger, Swan's.....	gr 1.00
Hoe, Rake, Shovel, &c.....	60&60&5

Hangers—

Barn Door, old pattern.....	60&10&10
Barn Door, New England.....	60&10&10
Samson Steel Anti-Friction.....	55
Orleans Steel.....	55
Hamilton Wrought Steel Track.....	55
U. S. Wood Track.....	55
Champion.....	55
Rider and Wooster, Medina Mfg. Co's list.....	70
Climax Anti-Friction.....	55
Climax Anti-Friction for Wood Track.....	55
Reed's Steel Arm.....	50
Challenge, Barn Door.....	50
Sterling.....	50&50&10
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50&2
Cheritree.....	50&10
Kidder's.....	40&10
Best Anti-Friction.....	60&10
Duplex (Wood Track).....	60&10&5
Terry's Pat., per doz pr. 4 in., \$10.00; 5 in., \$12.00.....	50&10
Terry's Steel Anti-Friction Leader.....	50&10
Terry's Steel Anti-Friction Ideal.....	50&10
Cronk's Patent Steel Covered.....	50&5
Wood Track Iron Clad, ft. 10.....	50
Carrier Steel Anti-Friction.....	50&10
Architect, per set.....	20
Eclipse.....	20&10
Felix, per set.....	20
Richards.....	30&30&10
Lane's New Standard.....	50&50&5
Lane's Standard.....	50&50&10
Lane's Parlor.....	40
Ball Bearing Door Hanger.....	20&10&25
Warner's Pat.....	25&10
Stearns' Anti-Friction.....	20&10&20
Stearns' Challenge.....	25&10&25
Faultless.....	40&40&5
American, per set.....	20&10
Rider & Wooster, No. 1, 23¢; No. 2, 74¢.....	40
Paragon, Nos. 1, 2 and 3.....	25&10
Cincinnati.....	25&10
Paragon, Nos. 5, 5 1/2, 7 and 8.....	20&10
Crescent.....	60&60&10
Nickel, Steel, Nos. 0, 25¢; 1, 30¢; 2, 15¢.....	20&10
Scranton Anti-Friction Single Strap.....	20&10
Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45
Star.....	40&10&40&10
May.....	50&50&10
Barry, \$6.00.....	40&10
Interstate.....	40&10
Magic.....	40
Pendulum, Payson's.....	40
Moody.....	45

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	
Blood's.....	
Hunt's.....	
Hurd's.....	
Mann's.....	
Peck's.....	
Underhill's.....	40 & 10
Buffalo Hammer Co.....	@
Fayette R. Plumb.....	50&5
C. Hammond & Son.....	
Kelly's.....	
Sargent's & Co.....	
P. S. & W. Co.....	
Ten Eyck Edge Tool Co.....	10¢
Collins.....	50&50&5
Schulte, Lohoff & Co.....	

Hay and Straw Knives—

See Knives.

Hinges—**Blind Hinges—**

Parker.....	75&25
Huffer.....	50
Clark's, Nos. 1, 3, 5, 40 and 50.....	80&80&5
Clark's Mortise Gravity.....	50
Sargent's, Nos. 1, 3, 5, 11, 12, 13, 75 and 100.....	75&10
Reading's Gravity.....	75&10
Shepard's.....	
Noiseless.....	75&10
Niagara.....	80
Buffalo.....	80
Clark's Genuine Pattern.....	80
O. S. Lull & Porter.....	75&10
Acme, Lull & Porter.....	75
Queen City Reversible.....	70&10&5
Clark's, Lull & Porter, Nos. 0, 1, 1 1/2, 2 1/2, 3.....	75&10&25
North's Automatic Blind Fixtures, No. 2, for Wood, \$0.00; No. 3, for Brick, \$1.50.....	10

Gate Hinges—

Western.....	per doz \$4.20, 60&60&10
N. E.....	per doz \$7.80, 60&60&10
N. E. Reversible.....	per doz \$5.00, 60&60&10
Clark's, Nos. 1, 2, 3.....	60&10&5
Y. State.....	per doz \$4.90, 60&60&10
Automatic.....	per doz \$12.50, 50
Shepard's.....	60&10&5

Spring Hinges—

Geer's Spring and Blank Butts.....	40
Union Spring Hinge Co's list.....	
March, 1888.....	20
Barker's Double Acting.....	25
Union Mfg. Co.....	25
Bommer's.....	30
Chicago.....	15&20
Bardley's Patent.....	40
Acme.....	30
U. S.....	25&10
Empire and Crown.....	20
Rever and Monarch.....	55
American Gem and Steel.....	50
Oxford.....	50
Wiles.....	10
Devore's.....	40
Rex.....	40
Royal.....	60
Reliable.....	60
Champion.....	60
No. 10 Matchless.....	60&10
No. 25 Unbreakable.....	50&10
Samson, per gross, \$14.00.....	net.

Wrought Iron Hinges—

List February 14, 1891.....	
Strap and T.....	50&10&50&10&5
Corrugated Strap and T.....	50&10&5
Screw Hook and T.....	6 to 12 in., 10¢; 14 to 20 in., 15¢; 22 to 36 in., 25¢
Strap.....	14 to 20 in., 10¢; 22 to 36 in., 15¢
Screw Hook and Eye.....	1/4 in., 10¢; 3/8 in., 15¢; 1/2 in., 20¢; 5/8 in., 25¢
Rolled Blind Hinges, Nos. 32 and 34.....	50&10
Rolled Blind Hinges, Nos. 232 and 234.....	50&10
Rolled Plate.....	70&10
Rolled Raised.....	70&10
Plate Hinges (8, 10 & 12 in., 10¢; 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000.....	46
"Providence" over 12 in., 10¢.....	46

Hoes—

D. & H. Scovill.....	30
Lane's Crescent, Planters' Pattern.....	45&5
Lane's Razor Blade, Scovill Pattern.....	30
Maynard, S. & O. Pat.....	45&5
Sandusky Tool Co., S. & O. Pat.....	70&70
Am. Axe and Tool Co., S. & O. Pat.....	5
Chattanooga Tool Co., S. & O. Pat.....	60
Grub.....	50&10

Handled—

Garden, Mortar, &c.....	70&70&5&25
Planter's, Cotton, &c.....	70&70&5&25
Warren Hoe.....	60&60&5
Magic.....	per doz \$4.00

Hog Rings and Rings—

See Rings and Rings.

Hoisting Apparatus—

See Machines, Hoisting.

Hollow-Ware—

See Ware, Hollow.

Holders—

Bag—

Sprengle's Pat..... per doz \$18..... 60

Bit—

Extension.....	
Barber's.....	per doz \$15.00, 40&40&10
Ives.....	per doz \$20.00, 60&50&10
Diagonal.....	per doz \$24.00, 40&5
Angular.....	per doz \$24.00, 40&5

File and Tool—

Balz Pat.....	per doz \$4.00, 25
Nicholson File Holders.....	20
Dick's Tool Holder.....	20

Hooks—

Bird Cage, Sargent's List.....	60&10&10
Bird Cage, Reading.....	60&10&10
Clothes Line, Sargent's list.....	

Clothes Line, Reading list

Ceiling, Sargent's list.....	60&10&60&10&10
Harness, Reading list.....	55&10&55&10&10
Coat and Hat, Sargent's list.....	55&10&60&10
Coat and Hat, Reading.....	50&10&50&10&10

Wrought Iron—

Cotton.....	per doz \$1.25
Cotton Pat. (N. Y. Mallet and Handle Works).....	30
Tassel and Picture, T. & S. Mfg. Co.....	50
Wrought Staples, Hooks, &c.....	See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1888.....	60&60&10
Wire Coat and Hat, Miles, list April, 1888.....	50&50&10
Indestructible Coat and Hat.....	45&45&5
Wire Coat and Hat, Standard.....	60&60&10
Handy Hat and Coat.....	50&10&60
Steady Ceiling Hooks.....	50&10&60
Bell.....	80&80&10
Attic Coat and Hat.....	60&60&10
Williamson's Bird Cage Hooks, list April, 1892.....	40
Bright Wire Goods—See Wire.....	

Miscellaneous—

Grass, No. 2, \$2.00; No. 3, \$2.10; No. 4, \$2.25.....	
Nolin's Grass.....	per doz \$2.25
Bush.....	55&60
Whiffletree—Patent.....	55
Hooks and Eyes—Malleable Iron.....	70&70&10
Hooks and Eyes—Brass.....	60&10&10
Fish Hooks, American.....	50
Bench Hooks—See Bench Stops.....	

Horse Nails—See Nails, Horse**Horse Shoes—**

See Shoes, Horse.

Hose, Rubber—

Competition.....	75&75&10&5
Standard.....	60&10&10&70&10
Extra.....	60&60&10
N. Y. B. & P. Co., Para.....	25&5
N. Y. B. & P. Co., Dundee.....	50&10&60

Huskers—</

Presses—**Fruit and Jelly—**

Enterprise Mfg. Co.	20x10@30x
Henis	doz \$3.50
Shepard's Queen City	40x
Silver & Co.	doz \$2.75

Pruning Hooks and Shears—See Shears.**Pullers, Nail—**

Scranton	doz, \$18.00, 33x
Curtis Hammer	doz, \$9.00
Giant, No. 1	doz, \$18.00, 10x
Giant, No. 2	doz, \$15.00, 10x
Pelican	doz, \$9.00, 25x
Eclipse	Each, \$2.00, net
Economy	doz, \$6.00

Pulleys—

Hot House, Awning, &c.	60x@70x
Japanned Screw	60x@10x10x
Brass Screw	70x
Japanned Side	60x@10x10x
Japanned Clothes Line	60x@10x
Empire Sash Pulley	55x@90x
Moore's Sash, Anti-Friction	50x
Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50	50x@50x10x2x
Hay Fork, "Anti-Friction," 5 in. solid, \$5.70	50x
Hay Fork, "Common and Patent"	50x
Rushed	20x
Hay Fork, Tarbox Pat. Iron	20x
Hay Fork, Reed's Self-Lubricating	60x
Shade Rack	45x
Tackle Blocks—See Blocks.	
Moore's Anti-Friction 5 in. Wheel	doz, \$12.00, 40x

Pumps—

Cistern, Best Makers	60x@60x10x
Pitcher Spout, Best Makers	67x@70x
Pitcher Spout, Cheaper G'ds.	75x@75x10x

Punches—

Saddler's or Drive, good	doz, 60x@65x
Bemis & Call Co.'s Cast Steel Drive	50x@5x
Bemis & Call Co.'s Springfield Socket	60x@5x
Spring, good quality	doz, \$2.50@2.60
Spring, Leach's Pat.	70x@2x
Bemis & Call Co.'s Spring and Check	40x
Solid Timmers', P. S. & W. Co.	doz, \$1.44, 55x
Timmers' Hollow Punches, P. S. & W. Co.	30x@2x
Rice Hand Punches	15x
Avery's Revolving	40x
Avery's Sawset and Punch—See Sawsets.	

Rail—

Sliding Door, Wrt Brass	doz, 35x, 40x
Sliding Door, Bronzed Wrt Iron	ft, 7x
Sliding Door, Iron, Painted	ft, 4x, 40x
Barn Door, Light-In.	doz, 2.50, 3.10, 10x
Per 100 feet	Small, Med. Large
B. D. for N. E. Hangers	
Per 100 feet	\$3.15, 2.70, 3.25 Net
Terry's Steel Rail	ft, 4x@4x
Victor Track Rail, 7x ft.	4x@4x
Carrier, double braced, Steel Rail	ft, 4x@4x
Moore's Wrought Iron	25x
Moody Steel Rail, ft, 6x	45x

Rakes—

Cast Steel, Association g'ds.	70x@70x1x2x
Cast Steel, outside g'ds.	70x@70x2x2x
Malleable	70x@70x2x2x
Gibbs Lawn Rake	doz, \$4.90
Canton Lawn Rake	doz, \$3.75
Favorite Lawn Rake	doz, \$4.25
Oneida Lawn Rake	doz, \$6.00
Fort Madison Prize Bow Brace and Peersless	65x
Fort Madison Steel Tooth Lawn Rake	25x
\$6.00	

Razors—

J. R. Torrey Razor Co.	20x
Wostenholm and Butcher, \$10 to £2	10x
Jordan's A.A.A., new list	Net
Jordan's Old Faithful, new list	Net
Galvanic	doz, \$15.00
Electric Cutlery Co.	Net
Campbell Cutlery Co.	50x

Razor Stropps—

See Stropps, Razor.

Rings and Ringers—**Bull Rings—**

Union Nut Co.	55x
Sargent's	75x@10x
Hotchkiss' low list	30x
Humason, Beckley & Co.'s	70x@10x
Peck, Stow & W. Co.'s	50x@10x10x10x
Ellich Hd. Co., White Metal, low list	50x@50x10x

Hog—

Top of the Hill Ringers	doz \$2.00
Top of the Hill Ringers	doz \$1.25
Hill's Improved Ringers	doz \$1.25
Hill's Improved Ringers	doz \$1.12x
Hill's Tongue	doz \$3.00
Hill's Rings	doz bxs \$1.00
Perfect Rings	doz bxs \$1.50
Perfect Rings	doz \$2.15@2.25
Blair's Hog Ringers	doz \$2.00
Blair's Hog Ringers	doz \$0.90@1.00
Champion Ringers	doz \$2.00
Champion Ringers, Double	doz \$2.25
Brown's Ringers	doz \$2.00
Brown's Ringers	doz \$1.15@1.25
Electric Hog Ringers	doz boxes \$1.50
Electric Hog Ringers	doz \$2.00
Major Ringers	doz \$1.25
Major Ringers	doz \$2.00

Rivets and Burrs—

Iron, list Nov. 17, '87	60x@10x60x10x5x
Copper	60x@10x
Coppered Iron, Bettina Brand	40x

Rivet Sets—See Sets.**Rods—**

Stair, Brass	25x@30x
Stair, Black Walnut	doz \$4x

Rollers—

Barn Door, Sargent's list	60x@10x10x
Acme Moore's Anti-Friction	55x
Union Barn Door Roller	70x
Thompson Mfg. Co.'s Lawn Rollers	30x

Rope—The following prices are f.o.b. New York or factory, and are shaded 1/4¢ on large lots; terms, 1 1/4% for cash.

Manila, 7-16 in. diam. and larger	doz 10x
Manila, 1/4 in.	doz 11x
Manila, 5/16 and 5/8 in.	doz 11x@
Manila, Tarred Rope	doz 10x
Manila, Hay Rope	doz 10x@
Sisal, 7-16 inch and larger	doz 8x
Sisal, 1/4 in.	doz 8x@
Sisal, 5/16 and 5/8 in.	doz 9x
Sisal, Hay Rope	doz 8x
Sisal, Tarred Rope	doz 7x@
Sisal, Medium Lath Yarn	doz 7x@
New Zealand, 7-16 in. & larger	doz 6x@
New Zealand, 1/4 and 5/16 inch	doz 7x@
New Zealand, Hay Rope	doz 6x@
New Zealand, Tarred Rope	doz 6x
Cotton Rope	doz 13x@16x
Jute Rope	doz 6x@7x

Wire—

List February, 1892.

All kinds.....45x

Rules—

Boxwood.....80x@10x10x

Ivory.....50x@10x

Starrett's Rules and Straight Edges, Steel.....25x@10x

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cord—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—

See Stuffers or Fillers, Sausage.

Saws—The following prices are generally cut by jobbers.

Diastion's Circular	45x@45x5x
Diastion's Cross Cut	45x@45x5x
Diastion's Hand	25x
Woodrough & McParlin	
Hand, Panel and Rip	30x@30x5x
Narrow Champion Cross Cuts with Handles, ft.	18x@20x
Champion Thin Back Cross Cuts, ft.	36x@28x
Champion Extra Thin Back Cross Cuts, ft.	20x@31x
One Man Champion Cross Cuts, ft.	37x@40x
W. H. Maden & Clemson Mfg. Co.	
Hand, Panel and Rip	35x@35x5x
Narrow Champion Cross Cuts with Handles, ft.	18x@20x
Champion Thin Back Cross Cuts, ft.	26x@28x
Champion Extra Thin Back Cross Cuts, ft.	20x@31x
One Man Champion Cross Cuts, ft.	37x@39x
Atkins' Circular Shingle & Heading	50x
Atkins' Silver Steel Diamond X Cuts	ft, 70x
Atkins' Special Steel Dexter X Cuts	ft, 50x
Atkins' Special Steel Diamond X Cuts	ft, 32x
Atkins' Champion and Electric Tooth X Cuts	ft, 30x
Atkins' Hollow Back X Cuts	ft, 20x
Atkins' Mulay, Mill and Drag	40x
Atkins' One-Man Saw, with handles	ft, 40x
Peace Circular and Mill	45x@45x5x
Peace Hand Panel and Rip	25x@25x5x
Peace Cross Cuts	45x@45x5x
Richardson's Circular and Mill	45x@45x5x
Richardson's X Cuts	45x@45x5x
Richardson's Hand	25x@25x5x
C. E. Jennings & Co. Hand, Panel and Rip	33x@33x10x

Hack Saws—

Griffin's, complete	40x@10x50
Griffin's Hack Saw Blades	40x@10x50
Star Hack Saws and Blades	25x
Eureka and Crescent	25x

Scroll—

Lester, complete	10.00, 25x
Rogers, complete	\$4.00, 25x
Barnes' Builders' and Cab Makers'	\$15.25, 35x
Barnes' Scroll Saw Blades	35x

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality	doz \$18.00@19.00
Hatch, Tea, No. 161	doz \$6.50@7.00
Union Platform, Plain	\$2.10@2.20
Union Platform, Striped	\$2.40@2.50
Chatillon's Grocery Trip Scales	50x
Chatillon's Eureka	25x
Chatillon's Favorite	40x
Family Turnbells	30x@30x10x
Riehle Bros.' Platform	40x

Scale Beams—

See Beams, Scale.

Scissors, Fluting.....45x**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.)	\$6.00, 30x@10x
Box, 1 Handle	doz \$2.25@2.50
Box, 2 Handle	doz \$3.00@3.25
Defiance Box and Ship	20x@10x
Ship, Common	50x@10x60x
Ship, R. L. Tool Co.	doz \$3.50 net, 10x

Screen Window and Door Frames—See Frames.**Screw Drivers—**

See Drivers, Screw.

Screws—**Bench and Hand—**

Bench, Iron	55x@10x55x10x10x
Bench, Wood, Beech	doz \$2.25
Bench, Wood, Hickory	20x@10x
Hand, Wood	25x@10x25x10x5x
Hand, Grand Rapids, list	35x
Lag, Bunt Point, list Jan. 1, 1890	75x@10x
Coach and Lag, Gimlet Point, list Jan. 1, 1890	75x@75x10x
Bed	25x@5x
Hand Rail, Sargent's	70x@10x
Hand Rail, H. & F. Mfg. Co.	70x@10x75x
Hand Rail, Am. Screw Co.	75x
Jack Screws, Millers Falls list	50x@10x
Jack Screws, P. S. & W.	35x
Jack Screws, Sargent	70x
Jack Screws, Stearns	40x@10x10x

Cork—

Humason & Beckley Mfg. Co.	40x@10x50x
Williamson's	33x@33x5x
Howe Bros. & Hulbert	35x

Machine—

Flat Head Iron	65x
Round Head Iron	60x

Wood—

List January 1, 1891.	
Flat Head Iron	70x
Round Head Iron	65x
Flat Head Brass	70x
Round Head Brass	65x
Flat Head Bronze	70x
Round Head, Bronze	65x
Rogers' Drive Screws	82x@

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain	40x@50x40x10x
Grass	40x@10x50x

Scythe Snaths—

See Snaths, Scythe.

Sets—**Awl and Tool—**

Atken's Sets, Awls and Tools	
No. 20, ft, \$10.00	60x@60x5x
Fray's Adj. Tool Hdl., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9	45x
Millers Falls Adj. Tool Hdl., No. 1, \$12; 2, \$18	25x
Henry's Combination Hdt.	doz \$6.50
Stanley's Excelsior	
No. 1, \$7.00; No. 2, \$4.00; No. 3, \$5.50	30x@10x
Common Brad Sets	
No. 42, \$10.50; No. 43, \$12.50	70x@10x5x

Nail—

Square	gr, \$4.00@4.25
Round	gr, \$3.25
Buck Bros.	27x@
Cannon's Diamond Point	gr, \$12, 20x

Rivet—

Regular list.....70x

Saw—

Stillman's Genuine	doz \$5.00@7.75, 40x@5x
Stillman's Pattern, Hand	doz \$3.25, 55x
Cross Cut, \$5.25	55x
Common Lever	doz \$2.00, 45x@50x
Morrill's No. 1, \$15.00	40x@20x
No. 11, \$15.00	40x@10x40x10x5x
No. 3 and 4, \$18.00	40x@5x
No. 5, \$24.00	40x@5x
Leach's, No. 0, \$8.00; No. 1, \$15	15x@20x
Nash's	20x@10x20x10x10x
Hammer, Hotchkiss	\$5.50, 10x
Hammer, Bemis & Call Co.'s new Pat.	30x@5x
Bemis & Call Co.'s Lever and Spring Hammer	30x@5x
Bemis & Call Co.'s Plate	10x
Bemis & Call Co.'s Cross Cut	12x@
Atken's Genuine	\$13.00, 50x@10x60x
Atken's Imitation	\$7.00, 55x@5x
Bart's Pat. Lever	20x
Diastion's Star	40x@10x50x
Leopold	40x@10x50x
Atkin's Lever	doz No. 1, \$6.00
Atkin's Criterion	doz No. 1, \$6.00
Crossant (Keller), No. 1, \$15.00; No. 2, \$24.00	40x@10x
Avery's Saw Set and Punch	50x
Kohler's Royal	doz \$7.00
Kohler's Giant Royal	doz \$2.00
Crescent	doz \$3.00
Lloyd's Acme	doz \$15, 40x@10x
Taintor Positive	doz \$18, 50x

Sharpeners, Knife—

Larkins'	
Applewood Handles	doz, \$6.00, 40x
Rosewood or Cocobola	doz, \$9.00, 40x

Shaves, Spoke—

Iron	45x
Wood	30x
Bailey's (Stanley R. & L. Co.)	40x@10x
Stearns	30x@10x
Cincinnati	25x@10x
Goodell's	doz, \$9.00, 25x

Shears—

American (Cast) Iron	75x@10x75x10x5x
Barnard's Lamp Trimmers	doz, \$3.75
Timmers'	20x@2x
Seymour's, List Dec. 1891	60x@10x60x10x10x5x
Heinrich's, List Dec. 1891	80x@10x60x10x10x5x
Hemisch's Tailor's Shears	33x@
Cast Steel Trimmers:	
First quality	80x@80x10x
Second quality	80x@10x80x10x10x
Acme Cast Shears	10x@10x
Diamond Cast Shears	10x@10x
Clippers	10x@10x
Victor Cast Shears	75x@10x75x10x5x
Howe Bros. & Hulbert, Solid Forged Steel	40x
Chicago Drop Forge & F. Co., Solid Steel Forged	60x
Davenport Cutlery Co.	60x@10x10x
Clausen Shear Co., Japanned	70x
Clausen Shear Co., Nickeled, same list	60x
Galvanic 3/4 to 9 in.	doz, \$1.00, 10x
Electric Cutlery Co.	Net
Campbell Cutlery Co., Jap'd	75x
Nickel Plated	65x

Pruning Shears and Hooks.

Snaps Harness &c.

Anchor (T. & S. Mfg. Co.)	65¢
Fitch's (Bristol)	50¢10¢
Hotchkiss	10¢
Andrews	50¢
Sargent's Patent Guarded	70¢10¢10¢
German, new list	40¢10¢
Covert	50¢10¢5¢
Covert, New Patent	50¢10¢5¢2¢
Covert, New R. E.	60¢10¢5¢2¢
Covered Spring	60¢10¢10¢
Covert's Saddlery Works' Triumph	33¢

Snaths, Scythe

List	50¢50¢5¢
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Soldering Irons

See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 6½-inch, ½ doz., No. 5, 83; No. 5X, 80.	
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, 80.	

Spoke Shaves

See Shaves, Spoke.

Spoke Trimmers

See Trimmers, Spoke.

Spoons and Forks

Tinned Iron—

Basting, Cen. Stamp. Co.'s list	70¢10¢
Solid Table and Tea, Cen. Stamp. Co.'s list	70¢10¢
Buffalo, S. S. & Co.	33¢4¢2¢

Silver Plated

4 months or 5¢ cash 30 days:	
Meriden Brit. Co., Rogers	40¢15¢
C. Rogers & Bros.	40¢15¢
Rogers & Bros.	40¢15¢
Reed & Barton	40¢15¢
Wm. Rogers Mfg. Co.	40, 15¢5¢
Simpson, Hall, Miller & Co.	40, 15¢5¢
Holmes & Edwards Silver Co.	40, 15¢5¢
L. Boardman & Son	50¢12¢4¢

Miscellaneous

Holmes & Edwards Silver Co.:	
No. 67 Mexican Silver	50¢10¢5¢
No. 30 Silver Metal	50¢10¢5¢
No. 24 German Silver	50¢10¢5¢
No. 50 Nickel Silver	50¢10¢5¢
No. 49 Nickel Silver	50¢10¢5¢
Wm. Rogers Mfg. Co.:	
Rogers' Silver Metal	50¢10¢5¢
18¢ Rogers' German Silver	50¢10¢5¢
22¢ Rogers' Nickel Silver	50¢10¢5¢
German Silver	50¢50¢5¢
German Silver, Hall & Elton	50¢5¢ cash
Nickel Silver	50¢50¢10¢5¢ cash
Britannia	50¢50¢10¢5¢
Boardman's Nickel Silver, list July 1, 1891	60¢7¢5¢
Boardman's Britannia Spoons, case lots	60¢5¢ cash

Springs

Torrey's Rod, 39 in.	½ doz \$1.20@1.25
Gray's, ½ gr. \$20.00	25¢
Bee Rod, ½ gr., \$20.00	20¢25¢
Warner's No. 1, ½ doz \$1.50; No. 2, \$3.40	55¢55¢10¢
Gem (Coil), list April 19, 1886	10¢15¢
Star (Coil), list April 19, 1886	20¢20¢5¢
Victor (Coil)	60¢10¢60¢10¢5¢
Champion (Coil)	60¢10¢60¢10¢5¢
Cowell's, No. 1, ½ doz \$1.50; No. 2, \$15.00	50¢50¢10¢
Rubber, complete, ½ doz \$4.50	55¢10¢
Hercules	50¢50¢10¢

Carriage, Wagon, &c.

Elliptic, Concord, Platform and Half	
Scroll	60¢10¢10¢
Cliff's Bolster Springs	25¢

Squares

Steel and Iron	
Nickel-Plated	85¢85¢5¢
Try Square and T Bevels	60¢10¢10¢
Diston's Try Square and T Bevels	50¢
Winterbottom's Try and Micrometer	30¢10¢
Starrett's Micrometer Caliper Squares	25¢
Avery's Flush Bevel Squares	40¢
Avery's Bevel Protractor	50¢

Squeezers

Fodder—	
Blair's	½ doz \$2.00
Blair's "Climate"	½ doz \$1.25

Lemon

Porcelain Lined, No. 1	½ doz \$6.00
Wood, No. 2	25¢30¢
Wood, Common	½ doz \$3.00, 35¢
Dunlap's Improved	½ doz \$1.70@1.75
Sammis	½ doz \$1.50; No. 2, \$2; 12, \$18 ½ doz
Jennings' Star	½ doz \$2.50
The Ross	½ doz \$2.50
Dean's, Nos. 1, ½ doz \$3.50; 2, \$3.35; 3, \$1.90	Queen, \$2.50
Little Giant	50¢50¢10¢5¢
King	40¢5¢
Hotchkiss Straight Flash	½ doz \$12.00
Silver & Co., Glass	½ doz \$0.75@1.00
Manny Lemon Juice Extractor	Standard Improved, ½ doz \$0.75@1.00

Standard Fiber Ware

See Ware, Standard Fiber.

Staples

Blind—	
Barbed, ½ in. and larger	½ doz 7¢4¢
Barbed, ¼ in.	½ doz 8¢3¢
Fence Staples, Galvanized	Same price
Fence Staples Plain	See Trd. Rep

Steelyards

40¢10¢50¢

Stocks and Dies

Blacksmith's:	
Waterford Goods	35¢
Butterfield's Goods	35¢
Lightning Screw Plate	25¢30¢
Reece's New Screw Plates	25¢30¢
Reversible Ratchet	30¢
Gardner	25¢
Green River	25¢30¢

Stops, Bench

Morrill's	½ doz \$9, 50¢
Hotchkiss's	½ doz \$5, 10¢10¢10¢
Weston's, No. 1, \$10; No. 2, \$9, 25¢10¢5¢	
McGill's, ½ doz \$3	10¢
Cincinnati	25¢10¢
Terrell's Nos. 1 and 2, ½ doz, \$3; No. 3, \$5.60	30¢

Stone

Sythe Stones—	
Pike Mfg. Co., list April, 1892	33¢4¢
Cleveland Stone Co., list Nov. 1892	33¢4¢

Oil Stones, &c.

Pike Mfg. Co.:	
Hindustan No. 1, ½ doz	8¢
Sand Stone	5¢
Turkey Oil Stone, 4 to 8 in.	40¢40¢10¢
Turkey Slips	\$2.00
Washita Stone, Extra	50¢
Washita Stone, No. 1	40¢40¢10¢
Washita Stone, No. 2	30¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢
Arkansas Stone, No. 1, 3 to 5 ½ in.	\$2.80
Arkansas Stone, No. 1 ½ to 8 in.	\$2.50
Lake Superior	½ doz 13¢
Lake Superior Slips	½ doz 20¢

Stove Polish

See Polish, Stove.

Stretchers Carpet

Cast Steel, Polished	½ doz \$2.2
Cast Iron, Steel Points	½ doz \$2.80¢
Socket	½ doz \$1.75
Bullard's	25¢25¢10¢

Strops, Razor

Genuine Emerson	60¢60¢5¢
Imitation	½ doz \$2.00, 20¢10¢5¢
Torrey's	30¢
Badger's Belt and Com.	½ doz \$2.00
Lamont Combination	½ doz \$4.00
Jordan's Pat. Padded, list Nov. 1, '89	50¢
Electric Cutlery Co.	Net
Campbell Cutlery Co.	Net

Stuffer or Fillers,**Sausage**

Miles' Challenge, ½ doz \$20	50¢50¢5¢
Perry	½ doz, No. 1, \$15.00; No. 0, \$21.00
Draw Cut No. 4, each \$30.00	20¢
Enterprise Mfg. Co.	20¢40¢10¢
Silver's	40¢10¢

Sweepers, Carpet and Lawn

Carpet—	
Bissell No. 5	½ doz \$17.00
Bissell No. 8	½ doz \$20.00
Bissell, Grand	½ doz \$35.00
Domestic	½ doz \$21.00
Domestic, No. 2	½ doz \$22.00
Grand Rapids	½ doz \$24.00
Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00	½ doz \$15.00
Improved Parlor Queen, Nickle	½ doz \$27.00
Jannet	½ doz \$24.00
Excelsior	½ doz \$22.00
Garland	½ doz \$18.00
Parlor Queen	½ doz \$24.00
Housewife's Delight	½ doz \$15.00
Queen	½ doz \$16.00
Queen, with band	½ doz \$18.00
King	½ doz \$30.00
Weed, Improved	½ doz \$18.00
Hub	½ doz \$16.00
Cog Wheel	½ doz \$18.00
Ladies' Friend	½ doz \$15.00
Ladies' Friend No. 2	½ doz \$16.00
Advance	½ doz \$18.00
Our Leader	½ doz \$19.00
Triumph	½ doz \$20.00
Goshen	½ doz \$21.00
Supreme	½ doz \$22.00
Easy	½ doz \$22.00
Gilt Edge	½ doz \$24.00
Acme	½ doz \$26.00
Imperial	½ doz \$28.00
Grand Republic	½ doz \$30.00
Banner	½ doz \$32.00
The Star	½ doz \$21.00
Reliable	½ doz \$22.00
The Rapid	½ doz \$22.00
Our Own	½ doz \$27.00
Model	½ doz \$27.00

Lawn

Thompson Mfg. Co. 30¢

Tacks, Brads, &c.

List October 19, 1890. Old established straight weights. Short weight goods are sold at lower prices.

Carpet Tacks—	
American, Blued	60¢5¢
American, Tin'd and Cop'd	70¢
Steel, Bright and Blued	60¢5¢
Steel, Tinned and Coppered	70¢
Swedes Iron, Blued	72¢5¢
Swedes Iron, Tinned	75¢
American Iron Tacks, Domestic	60¢5¢
Swedes Iron Tacks—	
S. S., Blued	60¢5¢
S. S., Tinned	70¢
Lanc., Blued	55¢
Lanc., Tinned	60¢
Gimp and Lace Tacks	62¢5¢
S. S., Tinned	60¢5¢
Lanc., Blued	55¢
Lanc., Tinned	60¢
Basket and Trimmers Tacks—	
Lanc.	52¢5¢
S. S.	60¢
Hungarian Nails	60¢
Common and Patent Brads	55¢
Leathered Tacks	105¢
Brush Tacks, S. S.	60¢
Looking Glass Tacks, S. S.	35¢
Picture Frame Points, S. S.	35¢
Finishing Nails	60¢
Trunk and Clout Nails—	
Black	62¢5¢
Tinned or Coppered	66¢5¢
Basket Nails	60¢
Chair Nails	52¢5¢
Cigar Box Nails	45¢
Tin Capped Nails	50¢

Miscellaneous

Double Point	90¢90¢10¢
Wire Carpet Nails	50¢10¢
Plymouth Rock Steel Carpet Tacks	25¢

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list	50¢10¢
See also Nails, Wire.	

Tapes, Measuring

American	40¢40¢5¢
Spring	40¢
Chesterman's, Regular list	25¢30¢

Thermometers

Tin Case	80¢80¢10¢
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Thimble Skeins—See Skeins**Ties, Bale—Steel**

Standard Wire, list	50¢10¢5¢
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Tinners' Shears, &c

See Shears, Tinners' &c.

Tinware

Stamped, Japanned and Piced, list Jan 20, 1887	70¢10¢70¢25¢
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Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire**Tools**

Coopers'—

Bradley's	20¢
Barton's	20¢20¢5¢
L. & J. White	20¢5¢
Albertson Mfg. Co.	25¢
Beatty's	30¢
Sandusky Tool Co.	30¢30¢5¢
Shaves Cincinnati Tool Co.	20¢

Lumber

Ring Peavies, "Blue Line"	½ doz \$20.00
Ring Peavies, Common	½ doz \$18.00
Steel Socket Peavies	½ doz \$21.00
Mail Iron Socket Peavies	½ doz \$19.00
Cant Hooks, "Blue Line"	½ doz \$16.00
Cant Hooks, Common Finish	½ doz \$14.00
Cant Hooks, Mail Socket Clasp, "Blue Line" Finish	½ doz \$16.00
Cant Hooks, Mail Socket Clasp, Common Finish	½ doz \$14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish	½ doz \$12.00
Cant Hooks, Clip Clasp, Common Finish	½ doz \$12.00
Hand Spikes	½ doz 6 ft., \$15.00; 8 ft., \$20.00
Pike Poles, Pike and Hook	½ doz, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50
Pike Poles, Pike only	½ doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00
Pike Poles, not ironed	½ doz, 12 ft., \$5.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft., \$13.00; 20 ft., \$16.00
Setting Poles	½ doz, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00
Swamp Hooks	½ doz \$18.00

Saw

Atkins' Perfection	½ doz \$12.00
Atkins' Excelsior	½ doz \$6.00
Atkins' Giant	½ doz \$4.00

Tobacco Cutters

See Cutters, Tobacco.

Transom Lifters

See Lifters, Transom.

Traps

Game—	
Newhouse	40¢40¢5¢
Onida Pattern	70¢10¢
Game, Blake's Patent	40¢10¢5¢

Mouse and Rat

Mouse Wood, Choker, ½ doz holes, 9@10¢	
Mouse, Round Wire	½ doz \$1.50, 10¢
Mouse, Cage, Wire	½ doz \$2.50, 10¢
Mouse, Catch-em-alive	½ doz \$2.50, 15¢
Mouse, Bonanza	½ doz 0.90@1.00
Rat, Decoy	½ gr \$10.00, 10¢
Ideal	½ gr \$10.00
Cyclone	½ gr \$5.25
Hotchkiss Imp. Rat Killer	½ doz \$18.50
Hotchkiss New Rat Killer	½ gr \$16.50
Schuyler's Rat Killer	½ gr \$15.00

Triers

Butter and Cheese	25¢
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Trimmers, Spoke

Bonney's	½ doz \$10.00, 50¢
Stearns	20¢10¢
Ives, No. 1, \$15.00; No. 2, \$12.00	½ doz
Douglas	½ doz \$8.00, 20¢
Cincinnati	25¢

Trowels

Lothrop's Brick and Plastering	20¢10¢5¢35¢
Reed's Brick and Plastering	15¢
Diston's Brk and Plastering	25¢25¢5¢
Peace's Plastering	25¢25¢5¢
Clement & Maynard's	30¢20¢5¢
Rose's Brick	15¢20¢
Brad's Brick	25¢
Worral's Brick and Plastering	20¢
Garden	70¢
Cleves' Angle Trowel, ½ gro, No. 1, \$30; No. 2, \$30; No. 3, \$15	net @ 10¢

Trucks, Warehouse, &c.

R. & L. Block Co.'s list	40¢
Thompson Mfg. Co.	25¢

Tubes, Boiler

See Pipe.

Twine

Flax Twine—		BC.	P.
No. 9, $\frac{1}{4}$ and $\frac{1}{2}$ B Balls.....		25¢	31¢
No. 12, $\frac{1}{4}$ and $\frac{1}{2}$ B Balls.....		22¢	30¢
No. 18, $\frac{1}{4}$ and $\frac{1}{2}$ B Balls.....		20¢	29¢
No. 24, $\frac{1}{4}$ and $\frac{1}{2}$ B Balls.....		20¢	29¢
No. 36, $\frac{1}{4}$ and $\frac{1}{2}$ B Balls.....		18¢	28¢
No. 204 Mattress, $\frac{1}{4}$ and $\frac{1}{2}$ B Balls.....		52¢	54¢
Chalk Line, Cotton, $\frac{1}{2}$ B Balls.....		25¢	
Mason Line, Linen, $\frac{1}{2}$ B Balls.....		50¢	
2-Ply Hemp, $\frac{1}{4}$ and $\frac{1}{2}$ B Balls (Spring Twine).....		15¢	
3-Ply Hemp, 1 B Balls.....		16¢	18¢
3-Ply Hemp, $1\frac{1}{2}$ B Balls.....		15¢	15¢
Cotton Wrapping 5 Balls B.....		15¢	16¢
2, 3, 4 and 5 Ply Jute, $\frac{1}{2}$ B Balls.....			
Wool.....		61¢	64¢
Paper.....		13¢	14¢
Cotton Mops, 6, 9, 12 and 15 $\frac{1}{2}$ doz. to doz.....			18¢

Washers—

Size hole..... 5-16 3/4 1/2 3/8 to 1 1/2
Washers..... 5 1/2 4 1/2 3 1/2 2 1/2
In lots less than 200 lb., \$ 10, add 1/4¢, 5-b
boxes 1¢ to list.

Washer Cutters—

See Cutters, Washers.

Wedges—

Iron..... \$ 3 1/2
Steel..... \$ 3 1/2

Weights, Sash—

Solid Eyes..... \$ ton \$18.00 to \$19.00

Well Buckets Galvanized—

See Buckets, Well, Galvanized.

Wheels, Well—

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25

Wire and Wire Goods—**Iron—**

Br. & Ann., Nos. 0 to 18, 75¢ to 10¢ 75¢ to 10¢ 5¢
Cop'd, Nos. 0 to 18..... 75¢ to 5¢

Galv., Nos. 0 to 18..... 70¢ to 70¢ 5¢

Tin d, Tin'd list, Nos. 0 to 18, 70¢ to 70¢ 10¢

Stone,

Br. and Ann'd, Nos. 16 to 18..... 80¢

Bright and Ann'd, Nos. 19 to 26..... 80¢ 5¢

Br. and Ann'd, Nos. 27 to 36..... 82¢ 5¢

Tinned,

Tinned Broom Wire, 18 to 21, \$ 4 1/2

Galvanized Fence, Nos. 8 and 9..... 70¢ 10¢

Brass, list Jan. 18, 1884..... 25¢ to 33 1/2¢

Copper, list Jan. 18, 1884..... 33 1/2¢ to 40¢

Ann'd Wire on Spools..... 60¢

Malin's Steel and Tin'd on Spools..... 60¢

Malin's Brass and Cop. on Spools..... 50¢

Tate's Spooled, Tin'd & Annealed..... 60¢ 5¢

Tate's Spooled Cop. and Brass..... 50¢

Cast Steel Wire..... 50¢

Stub's Steel Wire, 12 to 30, imported..... 60¢ to 70¢

Wire Clothes Line, see Lines.

Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list..... 80¢ to 20¢ 85¢

Wire Cloth and Netting—

Painted Screen Cloth, good quality.

\$ 100 sq. ft., \$1.40

Galvanized Wire Netting..... 75¢ to 75¢ 10¢

Wire, Barb—

See Trade Report.

Wire Rope—See Rope, Wire.**Wrenches—**

American Adjustable..... 40¢

Baxter's Adjustable "S"..... 40¢ to 50¢

Baxter's Diagonal..... 50¢

Coe's Genuine..... 50¢ to 35¢

Coe's "Mechanics"..... 50¢ to 10¢ 35¢

Girard Standard..... 65¢ to 10¢ 70¢

Lamson & Sessions' Engineers'..... 60¢ to 10¢

Lamson & Sessions' Standard..... 70¢ to 10¢

P. S. & W. Agricultural..... 75¢ to 10¢ 80¢

Girard Agricultural..... 75¢ to 10¢ 80¢

Lamson & Sessions' Agric'l..... 75¢ to 10¢ 80¢

Bemis & Call's:

Pat. Combination..... 40¢

Merrick's Pattern..... 35¢

Briggs' Pattern..... 25¢

Cylinder or Gas Pipe..... 40¢ 5¢

No. 3 Pipe..... 50¢

Alken's Pocket (Bright)..... \$6.00, 50¢ to 10¢

The Favorite Pocket..... \$ doz., \$4.00, 40¢

Webster's Pat. Combination..... 25¢

Boardman's..... 30¢

Always Ready..... 25¢ 5¢

Alligator..... 50¢

Donohue's Engineer..... 20¢ to 10¢

Acme, Bright..... 50¢ to 25¢

Acme, Nickle..... 40¢ to 25¢

Hercules..... 70¢ to 70¢ 5¢

Walker's..... 55¢ 35¢

Diamond Steel..... 55¢ 35¢

Cincinnati Brace Wrenches..... 25¢ to 10¢

Taft's Vise Wrench..... 55¢ to 10¢ 35¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal. \$ 40

Linseed, City, boiled..... \$ 40

Linseed, Western, raw..... \$ 40

Lard, City, Extra Winter..... 80¢ to 87¢

Lard, City, Prime..... 85¢ to 87¢

Lard, City, Extra No. 1..... 60¢ to 65¢

Lard, City, No. 1..... 45¢ to 45¢

Lard, Western, prime..... 85¢ to 88¢

Cotton-seed, Crude, prime..... 30¢ to 30 1/2¢

Cotton-seed, Crude, off grades..... 28¢ to 29¢

Cotton-seed, Summer Yellow, prime..... 35¢ to 35 1/2¢

Cotton-seed, Summer Yellow, off grades..... 33¢ to 35¢

Sperm, Crude..... 68¢ to 70¢

Sperm, Natural Spring..... 67¢ to 70¢

Sperm, Bleached Spring..... 72¢ to 75¢

Sperm, Natural Winter..... 73¢ to 76¢

Sperm, Bleached Winter..... 78¢ to 81¢

Whale, Crude..... 43¢ to 45¢

Whale, Natural Winter..... 52¢ to 53¢

Whale, Bleached Winter..... 56¢ to 57¢

Whale, Extra Bleached..... 57¢ to 58¢

Sea Elephant, Bleached Winter..... \$ 40

Menhaden, Crude, Southern..... 33¢ to 35¢

Menhaden, Crude, Southern..... 37¢ to 38¢

Menhaden, Light Pressed..... 41¢ to 43¢

Menhaden, Extra Bleached..... 42¢ to 45¢

Tallow, City, prime..... 50¢ to 55¢

Tallow, Western, prime..... 45¢ to 50¢

Cocoonut, Ceylon..... 5 1/2¢ to 5 1/4¢

Cocoonut, Cochiti..... 6¢ to 6 1/4¢

Cod, Domestic..... 38¢ to 40¢

Cod, Foreign..... 42¢ to 45¢

Red Elaine..... 30¢ to 36¢

Red Saponified..... 4 1/2¢ to 5¢

Bank..... 35¢ to 36¢

Straita..... 36¢ to 37¢

Olive, Italian, bbls..... 64¢ to 65¢

Neatsfoot, prime..... 60¢ to 65¢

Palm, prime, Lagos..... 5 1/2¢ to 6 1/4¢

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test..... per gal 7¢ to 7 1/2¢

Black, 29 gravity, 15 cold test..... 7 1/2¢ to 8¢

Black, 29 gravity, summer..... 6¢ to 6 1/4¢

Cylinder, light, filtered..... 14¢ to 16¢

Cylinder, dark, filtered..... 10¢ to 13¢

Paraffine, 25 1/2 @ 24 gravity..... 11 1/4¢ to 12¢

Paraffine, 25 gravity..... 10 1/4¢ to 11¢

Paraffine, 28 gravity..... 8¢ to 8 1/4¢

Paraffine, red..... 9¢ to 1 1/4¢

NOVEMBER 30, 1892.

Zinc.....	gross ton	14 00
No. 1 Pewter.....	gross ton	7 00
No. 2 Pewter.....	gross ton	7 00
Wrought Scrap Iron.....	gross ton	17 00
Heavy Cast Scrap.....	gross ton	10 00
Stove Plate Scrap.....	gross ton	7 00
Burnt Iron.....	gross ton	5 00